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Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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AYRES HAILS INCREASED CAR VALUES

General Motors December Production, Retail Sales Show Gains Over Year Ago

Sales to Dealers During Past Year Exceeded by the Number of Units Sold at Retail; Export Shipments Down

NEW YORK, Jan. 14.—In December General Motors sold 68,252 cars to dealers in the United States, as compared to 36,482 cars in December, 1929, it was announced today. During the same month General Motors dealers sold 57,989 cars to consumers in the United States, as compared to 44,216 cars in December, 1929.

The total December sales to dealers, including Canadian sales and overseas shipments, were 80,008 compared to 40,222 in December, 1929. These increases are largely due to the introduction of new Chevrolet models in November instead of in January as in previous years.

For the year 1930, General Motors total sales at home and abroad, were 1,174,115 units, compared to 1,899,267 units in 1929.

Last year General Motors Corporation sold 1,035,660 cars to dealers, while General Motors dealers sold 1,057,710 cars to consumers. This compares with the sale of 1,535,852 cars to dealers and 1,498,792 cars to consumers for the year 1929. Whereas the corporation sold 37,060 more cars to dealers in 1929 than dealers sold to consumers, the

(Continued on Page 7)

DE VAUX-HALL SETS OPENING FOR MARCH 1

Grand Rapids, Mich., Jan. 14.—De Vaux-Hall Motors Company on March 1 will formally open its manufacturing plant here, with no less than 400 men on its pay rolls, it was announced today by Norman De Vaux, president of the new company.

It is the company's aim to boost production to 200 cars a day as quickly as possible. All production units for the new De Vaux Six will start operations simultaneously.

HARDWARE BUYING UP; INVENTORIES DECLINE

New York, Jan. 14.—Following the usual postholiday lull in hardware buying, the holiday trade of the country is placing somewhat larger orders than in recent weeks. The increased activity is apparent in most of the important market centers, Hardware Age says, and in most instances some improvement in general conditions has been re-

(Continued on Page 7)

FIRST V-16 FRONT-DRIVE SEDAN COMPLETED IN U. S.

Los Angeles, Jan. 14.—What is claimed to be the most powerful passenger car ever built in America and the only V-16 front-drive sedan ever manufactured is nearly ready for its road test.

The machine is now being completed in the Los Angeles factory of Harry A. Miller, Inc., 6233 South Gramercy Place.

McCORMICK RESIGNS AS PRESIDENT OF LYCOMING MFG. CO.

WILLIAMSPORT, Pa., Jan. 14.—Associated with the Lycoming Manufacturing Company since its inception in 1908, and its president since 1926, John H. McCormick announced his retirement from the company on yesterday.

Since 1910 when this company, under Mr. McCormick's management, first started the production of automobile engines, it has grown to a position of one of the largest manufacturers in the industry.

McCormick has been credited as being among the first to recognize the possibilities of the development of 8-in-line engines for moderate priced automobiles. His pioneer work in that field has been a big factor in the widespread adoption of straight eight cylinder engines that is so general in the industry today.

Mr. McCormick made no announcement of his future plans.

PHILADELPHIA SHOW SWINGS INTO STRIDE; SALES ON INCREASE

PHILADELPHIA, PA., Jan. 14.—The Philadelphia Thirtieth Annual Automobile Show is now going strong, having struck its stride Tuesday, following a rainy Monday that kept down attendance.

Tuesday, however, attendance not only was very heavy but showed a considerable increase over that of the corresponding day of last year's automobile show.

Reports of floor sales are increasing rapidly and prospects are said to be better than ever for the success of this year's show from all viewpoints. Among the organizations thus far holding luncheon meetings are the Roberts Nash Motor Company, Nash distributors, and Harper & Harper, Hupmobile distributors, both events being held on Monday at the Penn Athletic Club.

At the Nash meeting, at which President Joseph G. Roberts of the

(Continued on Page 8)

F. DICKINSON JOINS LENNEN & MITCHELL

New York, Jan. 14.—Frederick Dickinson, former director of advertising of the Hupp Motor Car Corporation, has joined the staff of Lennen & Mitchell, Inc., advertising agents, as vice-president.

SEES AUTOMOTIVE INDUSTRY AIDING BUSINESS RECOVERY

Urges Other Manufacturers to Follow Lead of Motor Car Makers; Says Upturn Certain in 1931

CLEVELAND, Jan. 15.—Col. Leonard P. Ayres, noted business forecaster, today held up the automobile industry's courage and initiative as an example for all other industries to follow if they would hasten business improvement.

Col. Ayres, who is vice-president of the Cleveland Trust Company, is nationally known as a statistician, economist and student of business, In the bank's mid-month business bulletin, issued today, he declares "liquidation of the unexpected in this depression has apparently been about complete" and adds that this circumstance "constitutes the soundest reason for believing that general business recovery will get under way in this new year."

Regarding the automobile industry he says:—

"The thirty-first national automobile show has just come to a close in New York, and others will be held this month and next in cities throughout the country. Two facts are conspicuously evident. One is that interest on the part of the public, and attendance at the expositions, is undiminished. The other is that the greatest of our industries has succeeded in reducing the prices of its products so far as to make its offerings compelling bargains. Never before have such great values in automobiles been made available for so few dollars.

"If other industries could follow this example and demonstrate their courage and initiative by making real and prompt reductions in the retail prices of their products, the beginnings of sustained business improvement would be hastened.

"Goods are being worn out, and savings are accumulating, but buy-

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TRAFFIC CONTROL IMPORTANT FACTOR DISTRIBUTION COST

Special from A. D. N. Washington Bureau

Washington, Jan. 14.—Effective traffic management is a factor of fundamental importance in the elimination of distribution wastes, according to the report of a special study of methods and problems of industrial traffic management issued today by the Department of Commerce.

Some of the more important sources of waste which may result from inadequate traffic management are shown to be failure to get proper rates on commodities shipped; failure to combine less-than-carload shipments into carloads to get the benefit of carload rates; carelessness in checking freight and express bills; neglect to make out and properly support claims against carriers, and failure to see that commodities shipped are properly packed to carry safely to destination.

On the other hand, it is stated, well-managed traffic departments usually show a profit from their operations. That is, actual cash receipts from overcharge and damage claims collected from carriers, freight allowances, insurance settlements and the like generally ex-

(Continued on Page 6)

South Carolina Car, Truck December Sales Top 1929

NEW YORK, Jan. 14.—Registrations of new cars in South Carolina in December were greater than in November and in December, 1929, according to statistics made available today.

New car sales, as indicated by the actual registrations, were 1,013, as against 1,000 in December, 1929, and 855 in November, 1930.

New commercial car sales for the final month of 1930 were 193, as compared with 141 in the corresponding month of 1929, and 213 in November.

Registrations of new Ford passenger cars in the state during December, 1930, amounted to 421, equal to 41 per cent. of the total, as against 491, or 49.1 per cent. of the total, in December, 1929.

Chevrolet's registrations last month amounted to 412, or 40 per cent. of the total, in December, as compared with 342, or 34.2 per cent. of the total, in December, 1929.

CANADIAN CAR PLANTS SPEEDING ACTIVITIES

Toronto, Ont., Jan. 14 (UTPS).—It is expected that the automobile plants in Toronto will, because of the upward swing in activity now reported, attain a high point in production by the middle of February.

About 300 men, practically all old employees, states T. K. Jones, assistant general manager of the Willy-Overland, Ltd., plant here, were brought back to their machines on January 2.

"We are running steadily," reports Gordon McColl, assistant branch manager of the Ford Company of Canada, Ltd. "We started our new line last Monday." The Ford plant, he said, had been running five days each week.

The Durant Motors of Canada, Ltd., also will speed up production during February.

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Chrysler Seeks to Enjoin Graham-Paige Corporation

DETROIT, Jan. 14. — Chrysler Corporation and Graham Brothers, one of its subsidiaries, filed suit in the Federal District Court at Detroit against the Graham-Paige Motors Corporation and Ray A. Graham, Joseph B. Graham and Robert C. Graham to enjoin them perpetually from the use of the Graham name in the manufacture and sale of trucks and buses, and to enjoin them for a period of five years subsequent to April 30, 1926, from the manufacture and sale of any trucks and buses in competition with the Graham Brothers division of Chrysler Corporation.

The court also is asked to require the three Grahams and the Graham-Paige Corporation to make an accounting and payment for profits derived since December, 1929, from the manufacture and sale of trucks and buses using the Graham name.

The complaint alleges violation by the three Grahams and the Graham-Paige Motors Corporation of an agreement between the three Grahams and Dodge Brothers, Inc., growing out of the sale of Graham Brothers, a corporation, to Dodge Brothers, Inc., on April 30, 1926. In connection with that sale, the three Grahams, who received more than $13,000,000 for the Graham Brothers Corporation agreed not to engage in the manufacture or sale of trucks or buses in competition with Graham Brothers for five years subsequent to the sale and to refrain forever from using the Graham name in the manufacture and sale of such products.

The bill of complaint filed states that on October 2, 1925, Dodge

(Continued on Page 7)

Ayres Sees Car Makers Aiding Business Recovery

(Continued from Page 1)

ing is hesitant because people fail to find in many lines of retail goods the price reductions they expect when they read about the declines in wholesale commodities.

"The automobile industry has shown that real reductions can be made, and it is to be hoped that their experiment will succeed, and that their bold lead will be followed by other industries."

Col. Ayres points out that business has to go on because the life of the nation goes on, and so business always adjusts itself to new conditions, no matter how unfavorable they may be.

"In all our long business history," he adds, "the second year after a panic decline has never been as bad as the first year. Before the end of the second year business has always had its readjustments far enough along to get under way at an increasing pace.

"It may even prove that the worst of the depression has not yet been reached, but nevertheless, the weight of the probability is distinctly in favor of durable improvement beginning in 1931. American business has spent an entire year in adjusting itself to new, unfavorable and unexpected conditions. This is the best reason for believing that it will do better in 1931 than it did in the year just closed."

This Cleveland banker places great stress on his belief that retail prices have not yet been lowered sufficiently in comparison with wholesale prices. That evidently is why he hails with considerable satisfaction the automobile industry's aggressive stand in making a quick adjustment in selling prices of cars and trucks.

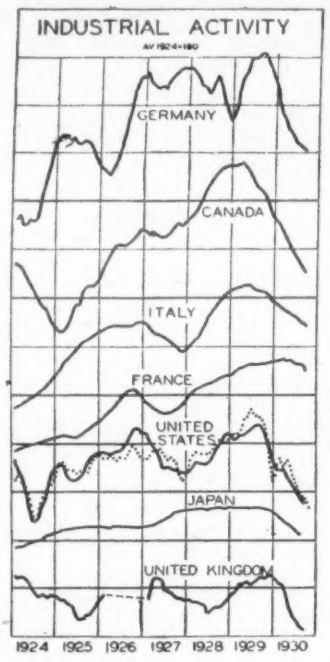
"Retail prices appear to have declined a good deal less promptly," he remarks, "and considerably less rapidly, during this depression, than wholesale prices. The accompanying diagram shows the results of an attempt to inquire into this matter. The dotted line shows the monthly changes over the past sixteen years of the wholesale price index of the Bureau of Labor Statistics. The level of prices prevailing in 1915, at the beginning of the war, is taken as being equal to 100, and the changes since then are represented on that basis.

"Changes in retail prices are less easy to represent, for there is no good and inclusive index for them. The solid line in the diagram shows the changes in retail prices if the average for 1915 is taken as equal to 100, and it has been constructed from the indexes of changes in the cost of living, minus the items for rent. During the rapid war-time advances in price levels the retail line moved much more slowly than the wholesale one, and did not mount so high. In the great period of deflation ten years ago it again moved more slowly, and it did not drop so low.

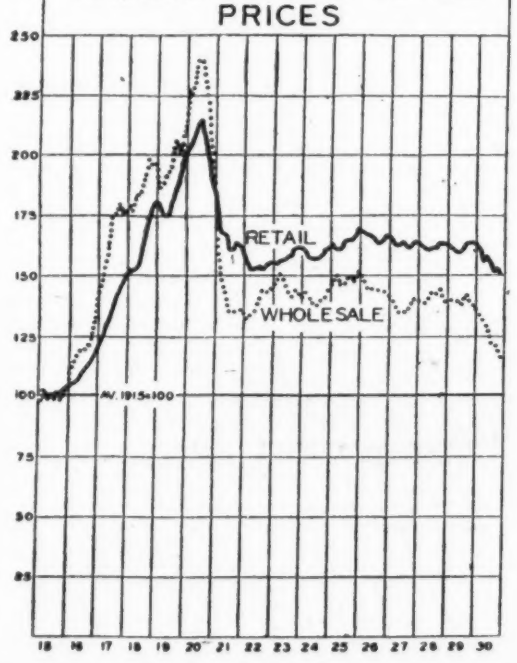
"In general the tendency of the retail prices has been to follow the course of the wholesale ones in major changes and in most minor ones, but to do so rather slowly and incompletely. At the bottom of the price deflation ten years ago wholesale prices reached a low point of 132, but the greatest decline of the retail prices was to a level twenty points above that at 152. Both indexes reached their highest post-war levels at the end of 1925, when wholesale prices were 151, and retail prices almost twenty points above at 170.

"In the summer of 1929 wholesale prices were at a level of 141, and retail prices 23 points above at 164. The subsequent decline has carried wholesale prices down to an average for last November of 116, while retail prices have declined only to 150, or to a level 34 points above that. The decline of wholesale prices in this depression has been about 18 per cent. and that of retail prices only about 9 per cent.

"After making allowance for the fact that the statistical indexes available for comparing these price changes are not fully satisfactory, it seems safe to conclude that further declines in retail prices are probable.



"A major decline in wholesale prices is under way, and so far there has been hardly more than a minor decline in retail prices. It is not likely that the reductions in retail prices will go as far as those for commodities at wholesale, or terminate so soon, but it is probable that the downward movements will be more nearly equal than they have been as yet."



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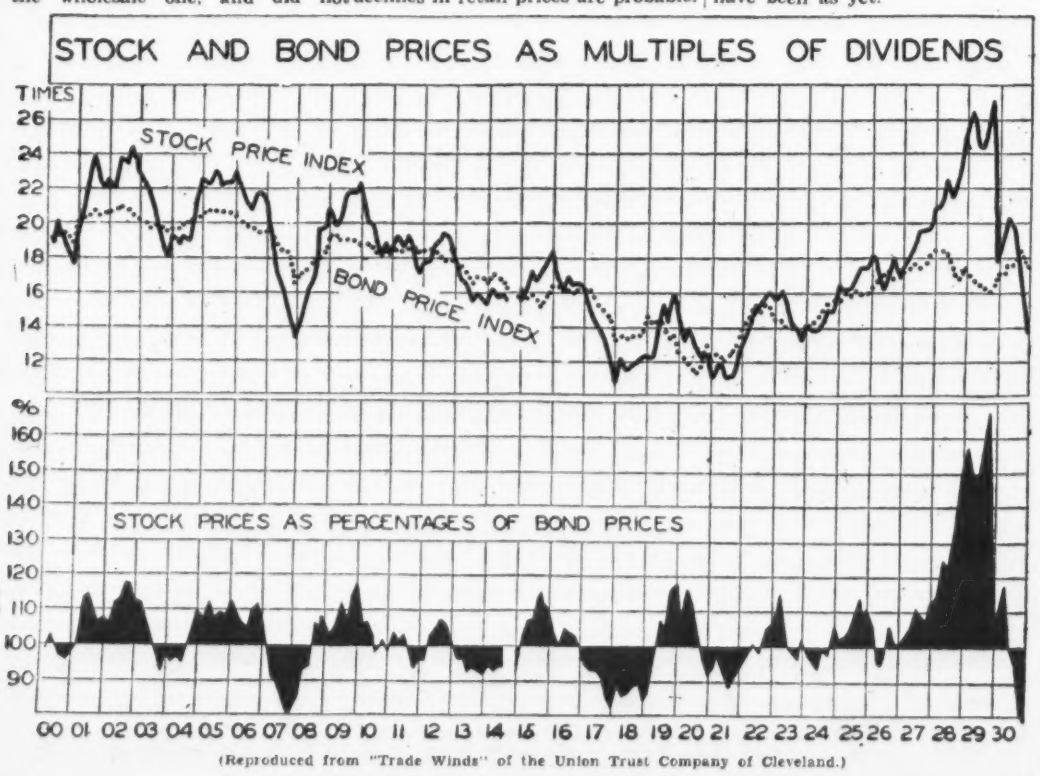

(Reproduced from "Trade Winds" of the Union Trust Company of Cleveland.)

SPARKS from DETROIT

Quiet Trolley Cars

* * *

Sefton Still a Star

* * *

That First Car

Chris Sinsabaugh—Detroit Editor

WHILE this column conductor was swinging around the banquet circuit at the New York show last week the stay-at-homes watched with interest the celebration of the adoption of "quiet" street cars on the city's municipal system. This took the form of a parade led by "Old 73," an original Detroit street horse car, preceding a dozen electric street cars from the year 1895 to 1930, followed by a dozen buses, illustrating progress in that line. Then came several of the twenty new cars equipped with noise-eliminating trucks.

Inasmuch as the Timken-Detroit Axle Company is responsible for this noise eliminator, it would seem as if the story of the parade is grist for this particular mill. Therefore, we assume our readers will be interested to know that Timken-Detroit has applied many automobile features to this new type of street car truck, particularly in lightening it and in carrying most of the weight as "sprung" weight. A reduction of 3,400 pounds per truck has been effected through the ingenuity of Nelson R. Brownyer and the Timken-Detroit engineers; important when it comes to the question of track maintenance.

I am told that sound tests made in Detroit and Chicago have proved that this Timken type of truck is 50 per cent. less noisy in straight running on smooth track and in going over switches and crossings than a car equipped with the present type. Worm gears are used to eliminate gear noises. A new type of brake, developed out of automobile experience, is noiseless. The fifty horsepower electric motors, the brake and the frame of the truck are carried as "sprung" weight, and only the dead weight of the wheels and axles has "unsprung" contact with the track. Long-leaf automobile-type springs are used.

* * *

STILL the guest of Walter P. Chrysler, I. H. Sefton, associate editor of the Record of Colfax, Cal., winner of the $1,000-a-year-for-life prize in Plymouth's contest, "Why I Should Buy a Plymouth," is in Detroit this week, studying the wonders of this gay municipality after a week in New York.

Somehow or other, I get a big kick out of all this fuss that is being made over the country editor who will be on the Chrysler payroll the rest of his life because of a clever pen that wrote the winning answer for Plymouth. Sefton deserves his fame. Any newspaper man can imagine the Californian's reaction to the luncheon tendered him at the Cloud Club in the Chrysler Building during the New York show. A column conductor himself, even though Colfax has a population of only 1,000, what a thrill he must have had at the luncheon attended by such newspaper celebrities as Odd McIntyre, Grantland Rice, Floyd Gibbons, Bide Dudley, Karl Kitchen, H. I. Phillips and Leo Heatley, all famous column conductors, among the world's best, men whose stuff he had read for years and whom he never had expected to even see, let alone being the guest of honor at such an occasion! What a story for the pen of an Irvin Cobb!

* * *

WRITES George W. Sutton, Jr., from New York: "Reading your column I note that Mr. Ford believes the steam car he has purchased and which is on view in the Ford Museum at Dearborn was the first built in America and that it was born in 1857.

"If this is true, I have told a lot of lies to a lot of audiences. In making radio and business talks on automobile and motor boat matters, I have many times informed quivering listeners that the first American automobile also was the first American motor boat, and that the contraption, run by steam, was built and operated by Oliver Evans in Philadelphia in 1804.

"I have read many accounts of Evans and his automobile-boat and it has always been my opinion that he really was the father of motoring and motor boating in this country. One acount of Evans' invention is given in James Rood Doolittle's book, 'The Romance of the Automobile Industry,' and I believe I have on hand several other records of Evans' life and inventions."

* * *

NOT that I place much credence in the rumor, but just so as to be able to say, "I told you so" in case it happens, this column reports the latest one here in Detroit. According to this one, the oft-reported Ford eight is to be called the Edison and is to be made at the Highland Park plant. It will be a light car undoubtedly.

Chicago Distributors in 1930 Increased Aid to Dealers

Uniform Method Used by Practically All to Help Make Money — No Marked Increase in Number of Outlets

CHICAGO, Jan. 14.—The past year was marked by serious and thorough efforts upon the part of Chicago automobile distributors in helping their dealers make money. It was noticeable that no uniform method was adopted o rfollowed in attempting to bring about the desired results.

For instance, in some cases the number of dealers showed a decrease to the end that those handling certain makes of cars could reap profits. In other instances, as in the case of Chevrolet, there was practically no change in the number of dealers, while with Ford there was a sharp increase.

For the most part distributors did not attempt to add to the number of their dealers. Nor did they endeavor to decrease that number. The increases, where they occurred, came about through the switch of dealers from one make of car to another or through the entrance into the automobile selling field of dealers previously engaged in some other lines of business. There were still other examples of dealers who had previously dropped out of the automobile trade and who last year re-entered it.

It is interesting to note that the introduction of new models had much to do with the taking on of such lines by a number of dealers. The signing up activities were especially observable during the final five months of the year, which means that they came about simultaneously with the launching of new cars by the manufacturers. The dealers sought out the distributors or the factory wholesale branch, as the case might be. They were not solicited.

As for the dealers who dropped out of the business, they did so of their own volition so far as the distributors were concerned, although, generally speaking, the latter group, as a whole, is convinced that there have been too many dealers in the business. They agree with factory executives that in some cases dealers, especially in large cities, such as Chicago, have been too close together as to location, and that with 15 to 20 per cent. fewer dealers conducting their sales and service activities upon a businesslike basis, the opportunities for profit among those remaining in the automobile field will increase.

Undoubtedly, the mortality among Chicago dealers in 1930 was greatly reduced by efforts of both distributors and factory representatives who worked with many a dealer operating at a loss and discouraged over his prospects in the automobile field, and transformed him into a better, enthusiastic merchant. Introduction of new models had a most helpful effect in some instances, but for the most part the great benefits accrued from getting together as never before with the dealer, showing him how to improve his business methods and enabling him to garner some profit instead of continuing at a loss.

The efforts expended by the distributors and factory men, who found dealers in a most receptive mood, consisted largely in pointing out how to keep better cost accounting methods, how to improve executive management, how to go after prospects more efficiently, how better to handle used car trades and sales and how to build up service volume. These efforts, it is stated, will be carried along still further and more effectively in 1931.

One outstanding instance of helping dealers build service business came in the case of a large distributor who adopted a policy of encouraging owners, through service department letters, to patronize dealers instead of coming to headquarters for their service requirements. This distributor, of course, got its volume of business in jobs requiring larger expenditures, yet its policy of not trying to "hog" all the business proved popular with the dealers.

The so-called drive-away method of taking new car deliveries, which in its modern form means the trucking of cars from the factory, made great strides here during 1930. It was more widely adopted than in any previous year, and a reliable estimate places the number of cars so delivered at 60 per cent. of the total. The answer to it all, of course, is that Chicago, compared to most other large cities, is convenient, geographacially, to the large motor factories and lends itself readily to the drive-away method. One large distributor states that 80 per cent. of his automobiles come from the factory via drive-aways.

Putting Over First Annual Used Car Show

DEALERS IN CAMDEN, N. J., and vicinity staged their first annual used car show January 7, 8 and 9 with unusual success, and give considerable credit to its advertising campaign, an example of which is reproduced here. In addition to its individual ads, the dealers each had a paragraph of explanation of its business at the top of the page

Dealer Activities

CHARLES NETH OPENS ENGLEWOOD SHOWROOM

Englewood, N. J., Jan. 14.—Charles Neth, used car dealer, has opened a new showroom at 19 Grand Ave., here. For a number of years Neth was a used car dealer in Paramus.

MEHRL MOTOR COMPANY ORGANIZED IN OMAHA

Omaha, Neb., Jan. 14.—The Mehrl Motor Company has been organized here at 2206 Cuming St. as a direct factory dealer for the Durant line of cars. In addition to a complete line of new Durant models, repair parts for both Star and Durant will be carried.

GROSS MOTOR CO. TAKES ON WILLYS-OVERLAND LINE

New Brunswick, N. J., Jan 14.—The Gross Motor Company, Paterson and Schyler Streets, this city, has been appointed dealer of Willys, Whippet and Willys-Knight cars.

DE COZEN PREDICTS SALES INCREASE DURING 1931

Newark, N. J., Jan. 14.—Alfred De Cozen, president and general manager of the De Cozen Motor Company, New Jersey Chrysler distributor, believes that postponed replacement demand will account for increased car sales in 1931. During 1930, the De Cozen Motor Company inaugurated new distribution plans necessitated by the depression. Those plans were the replacing of dealers by direct branches of the Newark company in the larger points where it was obligatory to maintain large service facilities. The first branch opened by the De Cozen Motor Company was in Paterson, the seat of Passaic county, where more than 2,500 Chrysler cars are registered. The second branch is in East Orange, in the De Cozen building, at Central Avenue and Princeton Street.

BECKER-ANDERSON TO HANDLE HUDSON-ESSEX

Chicago, Jan. 14.—The appointment of the Becker-Anderson Motor Company as community dealer for the Hudson-Essex line is just made known by Butler Motors, Inc., Chicago distributor. The company is headed by Adolph G. Becker and Lester Anderson, with headquarters on the northwest side, at 2479 Milwaukee Ave.

PIERCE-NACKARD CO. IN NEW QUARTERS

Flagstaff, Ariz., Jan. 14 (UTPS).—The Pierce-Nackard Motor Company, Chrysler automobile dealer here and in vicinity, has opened its new show room and repair shop at 15 North Agassiz St.

ROCHESTER HUPMOBILE DISTRIBUTOR MOVES

Rochester, N. Y., Jan. 14.—New and larger quarters were opened at 1048 University Ave., by James J. Williams, Hupmobile distributor. Service department space is nearly double that of old quarters.

BOSTON SHOW WILL DISPLAY ALL MAKES

Boston, Mass., Jan. 14.—Visitors to the automobile show this year, which opens January 17 in Mechanics Building and continues through January 24, will find practically every make of car that is now on the market, running the whole gamut of sizes and prices. They will occupy all the space on the main floor and some of the balcony space, the remainder being given over to accessories and the basement to commercial cars and trucks and service machinery. Two different decorative motifs are being used. Exhibition Hall will be Moorish, a style that lends itself with peculair effectiveness to setting off the modern automobile. As a spectacle, the coming show is expected to surpass any other ever held here. Manufacturers are particularly keen to learn what the message will be to them from the New England buying public, as evinced by interest in the Boston show. They confidently believe that the healthy tone apparent at the New York show will be even more in evidence at the Boston show, which is more nearly a retail show and therefore closer to the consumer.

CRANDALL CYCLE CO. NAMED AUSTIN DEALER

Springfield, Mass., Jan. 14.—The Crandall Cycle Company, 826-28 State St., has secured the franchise for the Austin car from Russel P. Taber, Inc., Austin distributor for Connecticut, western Massachusetts and southern Vermont. The Crandall company is well known as distributor for Indian motorcycles, boats and outboard motors. Thomas C. Humes will be manager of the Austin car division.

ANSEL BARR BUYS HARRISON MOTOR SALES

Cadiz, O., Jan. 14.—Ansel Barr, here, has purchased the Harrison Motor Sales Company, of L. S. Mikesell. Barr was formerly a mechanic for the company, which handles Oakland and Pontiac cars.

NEW FORD DEALERSHIP HAS BODY, FENDER PLANT

Rochester, N. Y., Jan. 14.—With a complete body and fender plant and a broad parking space, in addition to a double showroom and usual plant equipment, the Archer Motor Company, east side Ford distributor, has opened its new headquarters at 350 Monroe Ave. Raymond E. Archer is president and general manager.

The rear display room is used for reconditioned cars. Automatic lifting devices have been installed in the service department to speed work. The plant operates on a twenty-four hour a day schedule.

TRENTON CLUB HOLDS LUNCHEON CONFERENCE

Trenton, N. J., Jan. 14.—Directors of the Trenton Automobile Club conducted a luncheon conference at Hotel Hildebrecht, with S. E. Kaufman, president of the organization, presiding. In attendance was Russell E. Singer of Washington, assistant secretary of the American Automobile Association.

GRANTED S. C. CHARTER

Kingstree, S. C., Jan. 14.—Winslow Chevrolet Company, local Chevrolet dealership, has been incorporated by W. H. Welch, president; H. H. Carter, vice-president; H. W. Winslow, secretary and treasurer.

FORD DEALER CHARTERED

New Haven, Conn., Jan. 14.—East Haven Motors, Ford dealership, has filed incorporation papers, listing capital of $6,000, all paid in. Incorporators are Patrick, Charles P. and Henry De Feo.

GM

Along with Oakland – Pontiac's fine quality, new low prices, there is, among other things, a program that permits good dealers to make money selling cars.

OAKLAND 8
PONTIAC 6

Oakland Motor Car Co
Pontiac, Mich.
Division of General Motors

Making new friends ...and keeping the old

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday and Monday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
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Circulation—Net paid Average over 10,000 daily guaranteed. Member A. B. C.

THURSDAY, JANUARY 15, 1931

ADVERTISING AND BUSINESS HEADQUARTERS

Harry A. Tarantous, Business Manager. J. Edward Schipper, Eastern Manager. George M. Slocum, Manager Detroit Bureau, 427-8 Fisher Building, Detroit, Mich., phone Empire 3500; Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill., phone Central 5936; Metz B. Hayes, New England Manager, Little Building, Boston, Mass.; Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash. Address ALL advertising and business correspondence to 2716 Graybar Building, New York City.

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Subscription Rates—One year, $12.00; two years, $20.00, for United States and Canada. To Foreign Countries—One year, $15.00; two years, $26.00. Single copies, 5 cents.

The Wiggin Plan

COMING from the chairman of the board of the Chase National Bank of New York, largest financial institution in the country, the program for dealing with the business depression just put forward by Albert H. Wiggin is entitled to the earnest consideration of every one. Stripped of detail, Mr. Wiggin's program includes the reduction of our claims against foreign governments for war debts, reduction of wages in keeping with present price levels and revision downward of our tariff schedules. A further suggestion was a reduction in the capital gain taxes.

A number of senators have viewed the Wiggin proposals without enthusiasm. One of the most pointed criticisms of the program came from Senator Couzens of Michigan. Taking up the plan in detail Senator Couzens first examines the proposal for reduction in wages: "I view his suggestion for a moderate cut in wages as wholly unreasonable," said Senator Couzens. "It would be a restoration of the old unequal distribution of the earnings of industry."

Giving his reason for opposing this proposed wage cut, Mr. Couzens said that there was no assurance given that after labor had consented to a wage reduction that cut would be passed on to the buying public. He felt strongly that the real effect of a wage reduction now would be further to impair our buying power.

With regard to reducing the amount of our allied debt claim as a means of stimulating international trade, Mr. Couzens says: "When a creditor reduces his claim against a debtor, he usually takes into consideration what the debtor is using his income for. If upon analysis our allied debtors were shown to be using their income for governmental purposes other than the expansion of their war facilities, it might be advisable to consider a cut in their debts."

That seems a sound view of the matter. If we could stimulate export trade by reducing allied claims, we would get our money back quicker than by standing pat. But if the nations supposed to be relieved by philanthropy on our part put the money accruing through the relief into more armament and other preparations for war, our act would be foolish instead of helpful.

Senator Couzens acknowledges that present tariff schedules seem to him too high and that they should be reduced, but he feels that this is a matter for study and scientific adjustment.

There is no question that the Wiggin proposals will be much talked about for some time to come. The eminent position in the world of finance of the proposer assures them adequate consideration. Senator Couzens' criticisms seem to us worthy of equal consideration. The Automotive Daily News urges its readers to give the proposals earnest thought, because parts of the plan are likely to come up in Congress for possible legislative action.

Detroit Employment

BY far the best news that has come out of Detroit in many months is the rising employment curve. We have definite figures from five of the big manufacturers, Ford, Chevrolet, Buick, Hudson and Cadillac, and these plants are now giving employment to approximately 176,000 people. Practically every other automotive plant in Detroit is adding to its production and its labor quota.

Detroit officials estimate that since the New York show ended the income of the city through re-employment has risen by $2,000,000 a week. The immediate effect is a distinctly more optimistic feeling in the Michigan city. If the spring buying season opens with some semblance of its old enthusiasm, we may know that the business revival has definitely started.

N. J. RUBBER MAKERS ELECT JOHN A. LAMBERT

Trenton, N. J., Jan. 14.—At the annual meeting and election of officers of the Rubber Manufacturers' Association of New Jersey, held recently, A. L. Viles, general manager of the Rubber Manufacturers' Association, Inc., addressed the members on the general situation in the rubber industry.

The following officers were elected: John A. Lambert, Acme Rubber Company, president; I. Ely Reed, Mercer Rubber Company, vice-president; Charles E. Stokes, Jr., Home Rubber Company, secretary; Horace B. Tobin, Woven Steel Hose and Rubber Company, treasurer.

75 DE SOTO DEALERS MEET AT ATLANTA

Atlanta, Ga., Jan. 14.—Approximately seventy-five De Soto motor car dealers, representing the southeastern territory, attended a one-day meeting here to discuss plans for operation during 1931. The meeting, held at the Henry Clay Hotel, was conducted by L. G. Peed, general sales manager, and Harry Mook, head of the used car department of the De Soto organization.

COMING EVENTS

JANUARY

10-16—St. Louis, Mo. National Roadbuilders' show and convention.
10-17—Buffalo, N. Y. Automobile Show.
10-17—Milwaukee, Wis. Automobile Show.
10-17—Philadelphia. Automobile Trade Association annual show.
10-17—Newark, N. J. Automobile Show.
11-17—Cincinnati, O. Automobile Show.
13-17—Evansville, Ind. Automobile Show.
17-24—Boston. Automobile Show.
17-24—Detroit, Mich. Annual Show. Convention Hall.
17-24—Hartford, Conn. Automobile Show. at state armory.
17-24—Montreal, Can. National Motor Show of Eastern Canada at Stadium.
17-24—Baltimore, Md. Automobile Show.
17-24—Pittsburgh, Pa. Automobile Show.
19-22—Chicago. National Wheel and Rim Association convention at Edgewater Beach Hotel.
19-23—Detroit, Mich. Society of Automotive Engineers' annual meeting.
19-24—Omaha, Neb. Automobile Show.
19-24—Elmira, N. Y. Automobile Show at Armory.
19-24—Niagara Falls, N. Y. Automobile Show.
19-24—Omaha, Neb. Automobile Show.
19-24—Louisville, Ky. Automobile Show.
19-24—Rochester, N. Y. Automobile Show.
21-22—Milwaukee, Wis. Wisconsin Petroleum Association meeting.
23-24—Oklahoma City. Oklahoma Petroleum Marketers' Associtaion meeting.
24-31—Chicago, Ill. National Automobile Show.
24-31—Altoona, Pa. Automobile Show at Jaffa Shrine Mosque.
24-31—Allentown, Pa. Automobile Show sponsored by Lehigh Automobile Trade Association.
24-31—Cleveland. Automobile Show.
24-31—Washington, D. C. Automobile Show.
24-31—Albany, N. Y. Automobile Show.
24-Feb. 1—Los Angeles. Automobile Show.
26-27—Chicago. National Automobile Dealers' Association convention.
26-31—Springfield, Mass. Automobile Show.
26-31—Syracuse, N. Y. Automobile Show at Armory.
26-31—Portland, Maine. Automobile Show at Exposition Building.
28-31—Harrisburg, Pa. Automobile Show.
29-30—Grand Forks, N. D. North Dakota Division, Northwest Petroleum Institute meeting.
31-Feb. 7—San Francisco. Automobile Show.

FEBRUARY

Jan. 31—Feb. 7—Twin Cities. Northwest Automobile Show, jointly sponsored by St. Paul and Minneapolis at the Minnesota State Fair Grounds.
2- 7—Scranton, Pa. Automobile Show.
2- 7—St. Louis. Automobile Show.
3—Minneapolis. Auto Trade Association convention.
7-14—Los Angeles. Automobile Salon.
7-14—Kansas City. Automobile Show.
9-14—St. Petersburg, Fla. Automobile Show at Winter Garden
9-14—Duluth, Minn. Twin Ports Automobile Show, held by Duluth and Superior, Wis., dealers.
9-14—Denver, Colo. Automobile Show.
11-13—Chicago, Ill. American Society of Mechanical Engineers' fuel meeting.
14-19—Indianapolis. Automobile Show at State Fairground.
16-20—San Francisco. Society for Steel Treating National Western Metal and Machinery Exposition.
21-28—San Francisco. Automobile Salon.
21-28—Quebec, Canada. Automobile Show.
22-March 1.—Los Angeles. Pacific Coast Transportation. Exposition at Shreve Civic Auditorium.
23-28—Des Moines, Ia. Automobile Show at Coliseum.
24-26—Columbus, O. Ohio Petroleum Marketers' Association meeting.
24-March 1—Seattle, Wash. Automobile Show at Civic Auditorium.
25-March 2.—Camden, N. J. Automobile Show.

MARCH

6-15—Geneva, Switzerland. Eighth Swiss International Automobile Show.
7-14—Brooklyn, N. Y. Automobile Show.
9-14—Wichita, Kan. Automobile Show at Forum.
11-13—Detroit, Mich. Michigan Oil Men's Association meeting.
16-22—Los Angeles, Cal. Second Annual Oil Equipment and Engineering Exposition.
19-21—San Antonio, Tex. Sixteenth annual meeting, American Association of Petroleum Geologists.
30-April 3—Indianapolis, Ind. Eighty-first meeting, American Chemical Society.

MAY

4- 9—Charlotte, N. C. Good Roads Convention.
9-Aug. 9—Berlin, Germany. International Garage Exposition.

Contemporary Comment

THE name of John Loudon Macadam is honored among road users, for he was the first to show that roads could be good, serviceable, cheap and lasting.

His methods have since been susperseded to some extent, but macadamized roads are still plentiful, although few users of them know anything about the revolution wrought by the engineer from Ayr.

If roads were made at all before Macadam's time they were intricate affairs consisting of piles, sub-roads, and the road proper. Macadam declared that good roads could be made without all this preparation, and, instead of roads 4½ feet thick, he made roads 10 inches thick.

Put very briefly, his discovery was that stones broken small, shaken and then pressed together by traffic, rapidly settled down face to face and angle with angle, and made as close a mass as a wall. This meant that roads were dryer, harder, freer from mud and dust, and undisturbed by extremes of temperature. Macadam showed that new roads could be made at a cost of £88 per mile, while the cost of repairs for old roads was £470 per mile per annum.

For the repairs of his roads Macadam always chose wet weather and loosened the hardened surface with a pick before putting on the first broken stones. This meant, obviously, that the new would mingle with the old under pressure, but it seemed the height of folly to try to mend a road by first breaking up its surface.

Even in the breaking of the stones Macadam demanded different methods. He found that stonebreakers sitting down worked with less fatigue than when standing up; thus he was able to employ youths and old men, and so to reduce the cost of labor. The size to which the stones were to be broken was determined by experiment. The area of contact of an ordinary wheel with the road was about an inch lengthwise, and so he decided that none of his stones should be more than an inch in any of its dimensions. If it were more than an inch, then a wheel passing over it would tend to raise the other end, and so the surface would soon be ruined. Surveyors carried about with them scales and weighed the largest stones in the heaps, and any which weighed more than six ounces had to be broken up.

In constructing a new road Macadam worked on what he called "three times"—that is, he applied a layer of stones four inches thick and worked that down well with rollers; then another layer, and then the final layer, and no binding material was used.

As the first requisite in road-making was toughness, Macadam favored whinstone, flint, limestone and pebbles. Limestone had a tendency to absorb moisture and to break up under frost, but it was cheap.

Macadam did not benefit greatly from his discovery, for the grant of £10,000 made to him by Parliament was little more than the sum he had expended in proving that good roads could be made.

But he has his reward, for his name is enshrined in the dictionary, and his memory is preserved among all who make, use, or plan new roads.—**C. H. L. in Autocar, England.**

RECOVERY in bonds is important as giving indisputable evidence of the fundamental soundness of the general credit situation. It is also significant as an indication that recent panic pressure on the banks has subsided. The September-December decline in bonds was due largely to the series of failures of banks and other financial institutions. It is fair to assume that the market would not recover so vigorously if any serious weak spots were left. Recent declines in commercial loans, rediscounts and the amount of money in circulation point to the same conclusion.—**The Analyst.**

TO the conservative section of the financial district it seems likely that revival will be the sum total of many influences, none standing out sharply. The prosperous period which followed the depression of 1920-1921 can be seen to have rested largely upon the making up of a war-time shortage in housing and upon the rapid development of the automobile industry to fill a new public need.

Indeed, it is easy to accept the conclusion that the automobile was the dominant factor in and the symbol of the kind of prosperity that prevailed in the years 1923-1929. For this reason the 1931 prospects of the motor industry are of exceptional interest.

Boom demand here is probably a thing of the past and the fortunes of the industry, while highly important, will hardly dominate the business trend. On the contrary, the sale of cars is much more likely to be determined increasingly by the ebb and flow of general business.

The old argument as to a saturation point in automobiles need not be revived. As a practical matter of volume production, it is perfectly obvious that new demand provides a rapidly decreasing proportion of sales, placing the success of the industry more and more upon a replacement basis. Despite the theoretical estimate of seven years as the average length of life of an automobile, replacement demand clearly is very elastic.—**Lawrence Stern, New York World.**

MERCHANDISING ACCESSORIES EQUIPMENT

WHOLESALE

DISTRIBUTION SHOP EQUIPMENT REPLACEMENTS

Jobber Builds Good Will, Aids Dealers With Window Tips

B. K. Sweeney Co., Denver, Has Own Print Shop; Gives Retailers Free Material; Salesmen Lend Personal Assistance

SOMETHING new in the way of jobber co-operation is being practiced by several of the leading automotive firms in Denver, and is meeting with real success in building business as well as in improvement of dealer relations.

This practice has to do with window tips to dealers through their salesmen, and sometimes from the office itself. It is natural that the jobber is in a better position than anyone else to stimulate business by this means, and also to work with the dealer of his products.

In the first place, the jobber has the equipment, and the personnel. His salesmen are traveling over the entire territory at frequent intervals, and are the only direct agent to come into contact with the dealer. Furthermore, the salesman is the only person who can give personal service, and assistance right on the ground.

There is one Denver firm in particular which is going at this phase of business development in a wholehearted and complete manner. In other words, the company believes that this problem is one which must be attacked at the origin, and that the only way in which dealers in the territory can be helped or stimulated is to give them practical ideas, and, more important, something with which to work.

This company, the B. K. Sweeney Electrical Company, carries one of the largest stocks of automotive supplies of any house in the Rocky Mountain region. A. S. Amilon, purchasing agent, explains the company policy as follows:—

"In the first place, we have our own print shop, which is equipped so that we may get out some of our own original ideas to the field. We frequently print window streamers and other matter, solely for the use of our dealers.

"More important, as far as we are concerned, is the fact that they are anxious and willing to get this material, and many times ask us to design certain window matter for them. Another of our services is the design and working up of newspaper advertisements for our customers. By this means we feel that we have helped them and raised the quality and effectiveness of their newspaper advertising."

Mr. Amilon goes on to explain that the window display or other matter which is frequently sent to the jobber from the manufacturer is sent out to the dealers regularly, and when the salesman calls he checks up on its use, and, if possible, helps the dealer to arrange his windows.

This plan is carefully worked, and in no case is the dealer ever made to feel that he is being forced to use certain material which he does not want. However, experience of this company has shown that the majority of dealers are not only willing but anxious to get window displays, and furthermore to be told how to use them to the best advantage.

Salesmen for the Sweeney company are urged to make a study of their customers and their window needs and assist them wherever it is possible in the actual installation of any window trim.

This service, including printing of window matter by the company itself, as well as the designing of newspaper advertisements, is all free to the customer, and he is urged to take advantage of the offer.

Concerning the advantage which the Sweeney company realizes from this practice, Mr. Amilon declares the biggest gain is from the fact that it is the best good-will builder he has ever known or used. Dealers, consciously or otherwise, are made to feel that the jobber is interested in him and in his problems, and that the jobber exists to help him solve those problems and to make more money.

Considering this plan as a business builder, Mr. Amilon says further that, while there is nothing phenomenal about the increased business, it nevertheless has acted as a very definite stimulus, and has actually helped sales to the point where the increase is felt.

MILLER BATTERY TAKES ON EXIDE DISTRIBUTION

Houston, Tex., Jan. 14 (UTPS).—The Miller Battery Service has become distributor for Exide storage batteries in twenty-five Texas counties. G. R. Alexander has been named business manager of the firm. J. D. Brown has been placed in charge of the wholesale Exide business.

Wholesale Brevities

Boston, Mass., Jan. 14.—Another warning to automobile owners has been sent out to have their cars put into shape as regards safety devices and headlamps. Vehicles registered on or before February 15 must be inspected before March 1 and those registered after that date must be inspected within fifteen days after registration. New requirements are announced for braking distance. A decelerometer reading of thirty feet or less is now required for four-wheel brakes. Official testing stations have been warned to make no repairs or adjustments without authorization from the owner and to confine themselves to standard tests otherwise.

Jamestown, N. Y., Jan. 14.—The C. & A. Auto Supply Company has been organized, to establish and operate a wholesale and retail automotive equipment and supply business in this city. The new concern has taken over the building and garage at 113 West 4th St., formerly occupied by the firm of Parker & Carlson, a partnership, and will continue the business from that address.

Seattle, Wash., Jan. 14.—The Romaine Electric Company has just been incorporated in Seattle to take over the magneto and generator business of T. F. Romaine.

H. D. TAYLOR CO. STAGES CLINIC DURING SHOW

Buffalo, Jan. 14.—The H. D. Taylor Company, automotive wholesaler, is holding an accessory clinic in its big Oak Street salesrooms and warehouse at the same time the automobile show is in progress here. Mechanics and garage proprietors are being instructed in the installation and maintenance of the latest accessories. E. F. Austin, manager of the company's automotive department, is in charge.

MOTOR SPECIALTY CO. TO SELL SOLON RODS

Seattle, Wash., Jan. 14.—The Motor Specialty Company has just been appointed a jobber for Solon rods, and is now carrying complete stocks.

Philadelphia Jobbers Plan Equipment Show March 18

PHILADELPHIA, Jan. 14.—The Philadelphia Automotive Wholesalers, of whose shop equipment promotion group Ralph E. McConnell, 401 North Broad St., is chairman, already are making progress for their 1931 equipment show, which will be held on March 18, 19 and 20 in the new Terminal Commerce Building, Broad and Callowhill Streets.

The show will, as in the case of last year's notable success, take the form of a group clinic, or co-operative shop equipment demonstration as originated by the M. E. A. for countrywide adoption through local zones, with the idea of the group demonstration being much more economical than clinics held by individual jobbers. The Philadelphia shop equipment show of 1930 was the first co-operative one of its kind in the country.

Harvey S. Plummer, formerly vice-president of the Franklin Air Compressor Corporation, and who was manager of the group clinic last year, has been selected to act in similar capacity for the 1931 show, the exhibits of which will occupy 25,000 square feet of a floor offering 35,000 square feet of space. Not only will the forthcoming show afford more space, better surroundings, greater accessibility and larger parking space, including basement capacity, but there will be other improvements over last year's show arrangements.

For example, the show will keep open later, the hours being from 1 p. m. till midnight. The morning hours will be devoted to further education of jobbers' salesmen and factory representatives. Then, too, as approved at a recent meeting of the group, the direct mail campaign has been calculated to bring a maximum of results, and some unusually compelling mailing pieces have been developed. A large list of exhibits is assured, and there will be eight or more jobbers represented in the clinic, which will be an informative and educative spectacle, bringing out and demonstrating improved appliances to meet the needs of automobile maintenance along such lines; for example, as lubricating, polishing, washing, fender repairing, brake work and other features with which the independent car dealer who intends to stay in business must familiarize himself.

In addition to the car dealer, the service manager, the independent repair shop owner, the garage man who maintains a shop and the truck fleet owner will be just as keenly interested in the clinic. The idea of "Come and Stay All Day" will be promoted by the management, as demonstrations will be virtually continuous.

Editor's Column

TWO methods of finance operation are available to jobbers through the recent absorption by the N. S. P. A. of the National Garage and Repairmen's Finance Association. One is known as the direct plan of financing and the other as the indirect plan.

The direct plan is available to jobbers who are in a position to furnish their own capital, approve their own credit applications and do their own collecting, in much the same manner as finance companies operate.

The indirect plan is available to jobbers who prefer not to get into the details of financing and would rather turn it over to an independent local finance concern in their locality.

Under this arrangement it is not necessary for the jobber to furnish his own capital, approve his credits, do any collecting or be liable as indorser or guarantor for any account, as all applications are financed and approved by the local finance company without recourse to the jobber or repairman.

The N. S. P. A. finance service department supplies all necessary forms, complete instructions and any special attention that may be necessary to put either of these two plans into operation for N. S. P. A. jobbers.

The N. S. P. A. maintenance division, which will include the membership of the former Repairmen's Association, will also include the authorized N. S. P. A. repair stations which have been signed up under the advertising service plan. Local sections of the maintenance division will be organized in various cities throughout the country and will hold monthly meetings. In each case, the local section will have as its secretary and treasurer a member of an N. S. P. A. jobbers' organization, who will also act as ex-officio member of the board of directors of the section.

It is estimated that the membership of the maintenance division will total 10,000 shops and garages by this time next year.

The details of the monthly service to maintenance division members are now being developed.

The formation of the N. S. P. A. maintenance division gives this association the advantage and distinction of a membership including all elements in the distribution cycle, from the repairman-consumer through the jobber to the manufacturer.

NEW JOBBER CHARTERED

Rochester, N. Y., Jan. 14. — The George W. Henner Corporation has been chartered by George W. Henner and associates to operate a wholesale automobile supply and equipment business.

CUMULATIVE NEW PASSENGER CAR REGISTRATION STATISTICS, DEC., 1930

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	Dodge	Durant	Essex	Ford	Franklin	Gardner	Graham	Hudson	Hupmobile	Jordan	La Salle	Lincoln
Arkansas					22	4		1	2	1		28								
Illinois	189	2	139	52	703	68	9	30	94	10	94	804	16	2	37	35	22		40	21
N. Dakota					32	1			1		4	49			1					
Total	189	2	139	52	757	73	9	31	97	11	98	881	16	2	38	35	22		40	21
Ark., '29			3		54	4		2	16	1	3	77								
Ill., '29	23		262	50	542	157	15	65	467	35	189	1372	31	4	65	123	91	2	67	46
N. D., '29			3		49	2		1	2	3	2	111			1	1	1			
Total, '29	23	*	268	50	645	163	15	68	485	39	194	1560	31	4	66	124	92	2	67	46

States	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Arkansas		1	1		1			3	1								1	66
Illinois	21	111	8	25	87	5	25	46	63	27	138	6	1	8	21	14	14	2,987
N. Dakota		1	3	2				2	3		1				4			104
Total	21	113	12	27	88	5	25	51	67	27	139	6	1	8	25	14	15	3,157
Ark., '29	1	2		2				5	2					5				177
Ill., '29	28	110	41	121	111	15	16	67	102	21	86	13	8	71		14	70	4,500
N. D., '29	1	3	5	2				4	16		1			11		1		220
Total, '29	30	115	46	125	111	15	16	76	120	21	87	13	8	87	*	15	70	4,897

*Not in production at that time.

Rim Output Reveals Large Gain in Wire Wheel Demand

CLEVELAND, Jan. 14.—Automobile rim production in the United States during 1930, according to official inspection statistics of the Tire and Rim Association, Inc., issued today, totaled 17,364,096 units compared with 24,143,528 in 1929.

Output for 1930 was approximately 28 per cent. below that for 1929, corresponding closely with estimates of automobile production.

In November there was a fair gain in rim output, partly forecasting the upturn in automobile production now taking place. In December, however, the number of rims manufactured and inspected dropped to a new low monthly record, going lower even than in November, 1929, when a sharp slump in production activity followed the stock market's collapse.

Inspections last month totaled 567,355 rims against 920,435 in the previous month of November and 897,548 in the corresponding December of 1929. The low for 1929 was 596,989 rims touched in November.

Rim output reached its high point for 1930 in April with 2,339,834 units produced and inspected compared with 2,729,899 in April, 1929.

Output for December, 1930, fell 35 per cent. compared with that for the corresponding month of 1929, much greater proportionately than the 28 per cent. decline for all of 1930 as compared with the 1929 total. This is explained by the fact that in the closing month of 1929 confidence was beginning to return and rim output was being increased. This trend, in fact, continued through the first four months of 1930.

The Tire and Rim Association's report just issued emphasizes the very rapid adoption of wire wheels during the latter part of 1930. The total output of drop center rims in 1929 was only 2,001,639, or 8.3 per cent. of the total rim output. In 1930 drop center rim production amounted to 6,202,122 units, or 35.7 per cent. of total output for the year. In 1930, also, there were produced 164,620 semi-drop base split rims, which was 0.9 per cent. of the total.

The year 1930 also saw the decline in popularity of the 20-inch balloon tire rim. Output under this classification in 1929 totaled 7,569,820, or 31.3 per cent. of the entire 1929 rim production. For twelve months of 1930, however, manufacturers turned out only 362,906 20-in. rims, which was 2.1 per cent. of all rims.

High pressure and clincher tire rims during 1930 continued to recede in importance. High pressure rims totaled only 41,521, against 129,219 in 1929, while the clinchers numbered only 77,767 in 1930, against 319,552 in 1929.

No important changes are reflected in types and designs of truck rims. Airplane rim production in 1930 was negligible, amounting to only 1,955 units against 24,113 in 1929.

Under the 19x3.00D drop center rim classification the Tire and Rim Association's figures do not include rims manufactured by the Ford Motor Company.

Following are comparative monthly figures of rim production for 1930 and 1929, respectively, as shown by the Tire and Rim Association's statement of rims inspected and approved:—

Comparative monthly record of rim production:

	1930	1929
January	1,601,326	1,835,207
February	1,653,421	2,265,024
March	2,061,999	2,613,403
April	2,339,834	2,729,899
May	2,010,067	2,574,787
June	1,338,226	2,134,213
July	1,449,161	1,896,666
August	1,504,187	1,570,555
September	1,052,109	2,110,031
October	863,579	1,647,350
November	920,435	596,989
December	567,355	879,548
Total	17,364,096	24,143,528

*As indicated by rims inspected and approved by the Tire and Rim Association, Inc., Cleveland.

ROSCOE TO HEAD OLDS LOS ANGELES OFFICE

Los Angeles, Jan. 14.—E. L. Roscoe has been appointed district representative for the zone office of the Olds Motor Works, here.

C. H. CARLISLE TO HEAD TORONTO BOARD OF TRADE

Toronto, Jan. 14 (UTPS).—C. H. Carlisle, president of the Goodyear Tire and Rubber Company of Canada and the Goodyear Cotton Company, was chosen president of the Toronto Board of Trade for 1931, at the annual nomination meeting, just held.

NEW WELDING SHOP

Winsted, Conn., Jan. 14.—The National Auto Radiator Company is a new automotive welding shop at 309 Main St., recently opened. Radiator and welding work and general repairs will be handled. Ernest De Nezza is proprietor.

JOHN COAPMAN JOINS TIMKEN-DETROIT AXLE

Detroit, Jan. 14.—John Coapman, district representative of the Spicer Manufacturing Corporation and the Brown-Lipe Gear Company, here, has joined the sales division of the Timken-Detroit Axle Company, this city. Mr. Coapman will direct his attention to passenger car manufacturers, particularly in connection with the application of the silent Timken worm drive to passenger car axles.

INTER-STATE MOTORS TO SELL STUDEBAKERS

Billings, Mont., Jan. 14.—Inter-State Motors, Inc., has been appointed Studebaker distributor here and in vicinity, according to an announcement by George D. Keller, Studebaker manager of branches. The company is headed by C. E. Clark.

TRAFFIC CONTROL IMPORTANT FACTOR DISTRIBUTION COST

(Continued from Page 1)

ceed the cost of the maintenance of the department.

Numerous instances where concerns discovered methods of stopping large wastes in their distribution systems are cited in the report and indications of how these methods may be applied are given. It is estimated that sources of waste in marketing and distribution take an annual toll of $10,000,000,000 from the country's business. Copies of the report may be obtained from the Government Printing Office in Washington, D. C.

EXPECT LARGE ATTENDANCE AT MONTREAL MOTOR SHOW

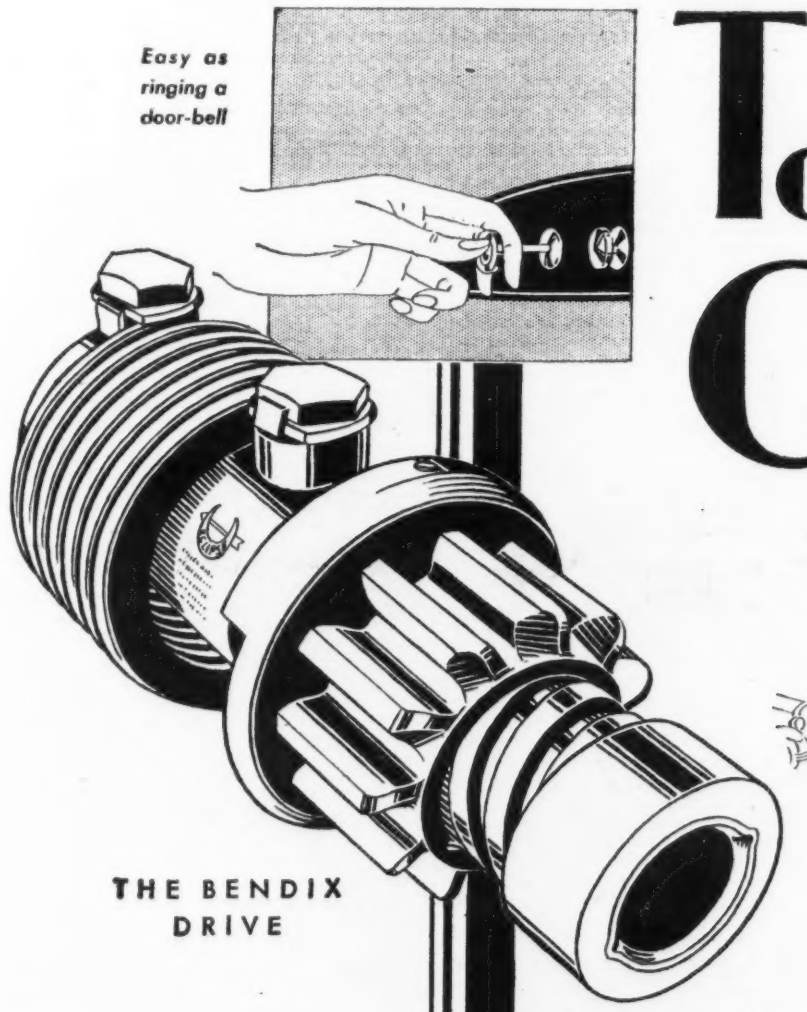
Montreal, Jan. 14.—H. D. Jones, director of the Montreal Automobile Trade Association, Ltd., which is sponsoring the annual Montreal Motor Show, which will open its doors to the public in the Stadium, corner Delorimier Avenue and Ontario Street, on Saturday, states a larger trade attendance than ever seen before is expected this year.

IN LARGER QUARTERS

Newark, N. J., Jan. 14.—The Tire Trading Company, Inc., and its automotive electrical service station are now located in larger quarters at 237-241 Halsey St., with all departments under one roof.

ADOPTS 24-HOUR PLAN

Orange, N. J., Jan. 14.—Lane's Service, 185 Central Ave., has adopted the twenty-four-hour service plan.



Touch and Go

THE BENDIX DRIVE

It's a long step from the old time method of cranking a car by hand to the present day when starting a car is done by simply touching a button located conveniently on the floor or dash.

With so little personal effort, the Bendix Drive takes hold, cranks your engine and lets go when the engine starts—every operation is an automatic one—all set in motion by the mere touch of a button.

Car dealers are demonstrating the convenience and ease of starting when the car is equipped with the Bendix Drive.

ECLIPSE MACHINE COMPANY, Elmira, N. Y.
ECLIPSE MACHINE COMPANY, Limited, Walkerville, Ont.
(DIVISIONS OF BENDIX AVIATION CORPORATION)

BENDIX
Automobile and Aviation
PRODUCTS

Bendix Brakes, Bendix Drive, Eclipse Aircraft Starters and Generators, Stromberg Carburetors, B-K Vacuum Brake Boosters, Aircraft Propellers, Bendix-Westinghouse Air Braking Systems, Marine Instruments, Scintilla Aircraft Magnetos, Delco Aircraft Ignition, Pioneer Instruments, Bendix-Cowdrey Brake Testers, and other equipment.

BENDIX
AUTOMOBILE

Chrysler Seeks to Enjoin Graham-Paige Corporation

(Continued from Page 1)

Brothers, Inc., paid the three Grahams $3,000,000 for 51 per cent. of the common stock of Graham Brothers, which manufactured and sold trucks and buses under various forms of the Graham name. At that time, the three Grahams and Dodge Brothers, Inc., entered into an option agreement covering the remaining 49 per cent. of the common stock. Dodge Brothers, Inc., paid $3,000,000 for this option and agreed to pay a total of $10,000,000 for the optioned stock. This option was exercised on April 30, 1926. Dodge Brothers, Inc., was in turn acquired by Chrysler Corporation in July, 1928.

It is alleged in the bill that in May, 1927, the three Grahams acquired an interest in the Paige-Detroit Motor Company, of which they are now officers and directors, and in January, 1928, changed its corporate title to the Graham-Paige Motors Corporation, and that, beginning in December, 1929, and in violation of the agreement with Dodge Brothers, Inc., the Graham-Paige Motors Corporation "maliciously, wrongfully and with intent to injure and destroy the benefits secured to the plaintiffs in said option agreement and the exercise of said option did, and it still does, manufacture and sell trucks and buses in competition with Graham Brothers and did, and it still does, use the name Graham as part of its name and of the trade name under which its trucks and buses are manufactured and sold."

TO OPERATE 13 BUSES

New Brunswick, N. J., Jan. 14.—Thirteen buses will begin operation on February 15 between Iselin and Park Avenue, Oak Tree, Rahway and Plainfield via Metuchen and Woodbridge and New Brunswick, it was announced. The buses will be owned by John Keenan, of Iselin.

U. S. RUBBER PLANT AT WINNSBORO ADDS SPINDLES

Richmond, Va., Jan. 14 (UTPS).—The Winnsboro, S. C., plant of the United States Rubber Company is installing 22,000 additional spindles, which will bring the total number up to approximately 100,000.

G. M. December Output, Sales Above Last Year

(Continued from Page 1)

dealers last year sold 22,050 more cars to consumers than they bought from the corporation.

The following table shows sales to consumers of General Motors cars in Continental United States, sales by the manufacturing divisions of General Motors to their dealers in Continental United States, and total sales to dealers, including Canadian sales and overseas shipments:

United States

Sales to consumers:—

	1930	1929
January	74,167	73,989
February	88,742	110,148
March	123,781	166,942
April	142,004	173,201
May	131,817	169,034
June	97,318	154,437
July	80,147	147,079
August	86,426	151,722
September	75,805	124,723
October	57,757	114,408
November	41,757	68,893
December	57,989	44,216
Total	1,057,710	1,498,792

Sales to dealers:—

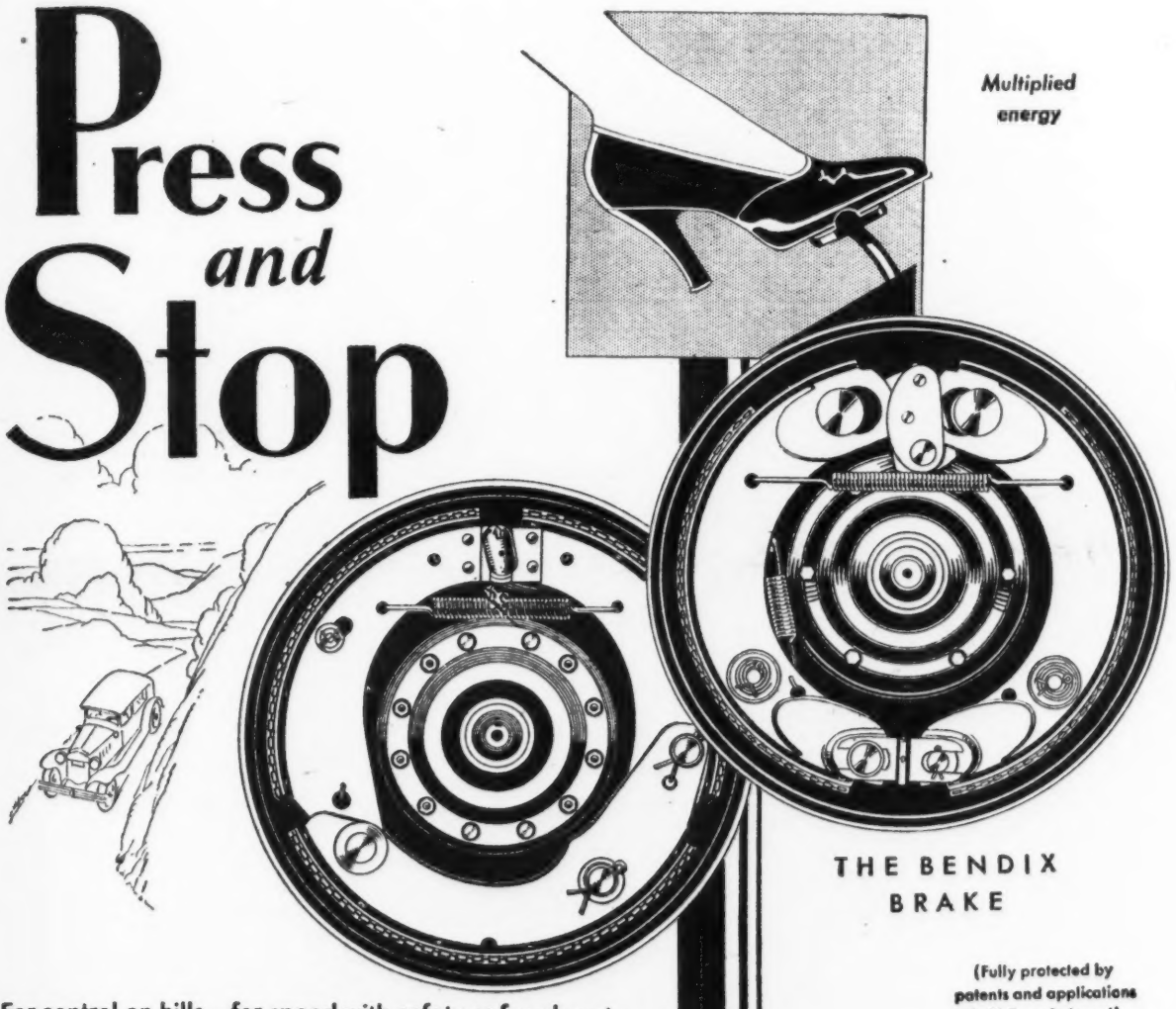
	1930	1929
January	94,458	95,441
February	110,904	141,222
March	118,081	176,510
April	132,365	176,634
May	136,169	175,873
June	87,595	163,704
July	70,716	157,111
August	76,140	147,351
September	69,901	127,220
October	22,924	98,559
November	48,155	39,745
December	68,252	36,482
Total	1,035,660	1,535,852

Total sales to dealers, including Canadian sales and overseas shipments:—

	1930	1929
January	106,509	127,580
February	126,196	175,148
March	135,930	220,391
April	150,661	227,718
May	147,483	220,277
June	97,440	200,754
July	79,976	189,428
August	85,610	168,185
September	78,792	146,483
October	28,253	122,104
November	57,257	60,977
December	80,008	40,222
Total	1,174,115	1,899,267

Unit sales of Chevrolet, Pontiac, Oldsmobile, Marquette, Oakland, Viking, Buick, La Salle and Cadillac passenger and commercial cars are included in the above figures.

Press and Stop



THE BENDIX BRAKE

(Fully protected by patents and applications in U.S. and abroad)

For control on hills—for speed with safety or for abrupt emergency stops—Bendix Brakes always answer the pedal pressure uniformly, quickly and positively.

Sturdy construction makes adjustments on Bendix Brakes lasting and performance dependable and uniform.

Foot pressure is increased automatically by the rotation of the wheels, making every stop smooth and effortless.

Such positive brakes are convincing in car demonstrations and back up the sales features of speed and control.

BENDIX BRAKE COMPANY
South Bend, Indiana
(DIVISION OF BENDIX AVIATION CORPORATION)

PRODUCTS and AVIATION

HARDWARE BUYING UP; INVENTORIES DECLINE

(Continued from Page 1)

flected by the expansion of sales volume. One of the most encouraging signs of betterment in basic conditions is that many workers are resuming their jobs in several of the largest industrial centers.

Another indication of the better tone now prevailing in the hardware industry is the good volume of business that is being booked in future orders for spring merchandise.

It appears that inventories have disclosed the abnormally low state of stocks and have made the necessity of making replenishments obvious to the dealer. The price tendency has become more stable at the present low levels, and buyers are not so cautious as they have been for some time with respect to placing quantity orders.

The credit situation has also shown some improvement since the first of the year and the average status of collections is deemed fairly satisfactory.

TRANSUE-WILLIAMS CO. PRODUCTION SPEEDED

Alliance, O., Jan. 14.—Production is being speeded at the plant here of the Transue-Williams Company, makers of automobile forgings. Thirty-five hammers are in operation after being down for some time. Two shifts of workmen have been recalled. Future operations, officials of the company said, are contingent on requirements from automobile manufacturers from now until spring. This concern is supplying several major automobile concerns with automotive stock.

W. D. JOHNSON APPOINTED BY FIRESTONE OF CALIFORNIA

Los Angeles, Jan. 14.—W. D. Johnson has been appointed merchandising director of the Firestone Tire and Rubber Company of California, with headquarters at the Firestone factory, here, where he will direct merchandising helps for the 3,000 Western Firestone dealers.

PHILADELPHIA SHOW SWINGS INTO STRIDE; SALES ON INCREASE

(Continued from Page 1)

Roberts Nash Motor Company was host, President C. W. Nash of the factory organization gave a brief talk. Vice-president and General Manager E. H. McCarty and C. H. Bliss, general sales manager of the factory organization, also were present.

About 600 men attended, including dealers and a number of bankers. This luncheon is an annual affair with the Roberts Nash Company at the Harper & Harper gathering, of which Paul I. Harper was in charge. Vice-president R. S. Cole, in charge of sales of the factory organization, gave a talk to the dealers, and George Lipe, also of the factory organization, explained the details of free wheeling.

There were 110 men present when the show opened Saturday night. Several exhibits were not complete, due to delay in shipment from the New York show, but on Sunday twenty-two carloads of chassis, complete models, special paint jobs and cut-away engines and parts, made the trip from Jersey City to the Commercial Museum by express train in two hours and thirteen minutes, and all exhibits were unloaded at the hall in less than two hours.

CRUDE OIL PRODUCTION GAINS; IMPORTS DECLINE

New York, Jan. 14.—The American Petroleum Institute estimates that the daily average gross crude oil production in the United States for the week ended January 10, 1931, was 2,084,900 barrels, as compared with 2,082,100 barrels for the preceding week, an increase of 2,800 barrels. The daily average production east of California was 1,546,400 barrels, as compared with 1,544,600 barrels, an increase of 1,800 barrels.

Imports of petroleum (crude and refined oils) at the principal United States ports for the week ended January 10 totaled 1,776,000 barrels, a daily average of 253,714 barrels, compared with 1,968,000 barrels, a daily average of 281,143 barrels for the week ended January 3, and a daily average of 253,607 barrels for the four weeks ended January 10.

CAMPBELL LEAVES ENGLAND FOR TRIALS AT DAYTONA

New York, Jan. 14.—Cables received here announce that Capt. Malcolm Campbell, the British racing driver, is sailing today with his 1,450 horse power Bluebird, to attempt to lower the record of H. O. D. Segrave of a mile at the rate of 231.362, made two years ago at Daytona Beach, Fla. The car is Capt. Campbell's own design, twenty-five feet six inches in length and weighing about 5,000 pounds. The engine is a supercharged twelve-cylinder Napier Lion. Capt. Campbell will proceed at once after arriving in New York to Florida to tune up his car for the trials.

PITTSBURGH S. A. E. HOLDS DISCUSSION ON BRAKES

Pittsburgh, Pa., Jan. 14.—Automobile brakes and their relation to traffic problems and safety was the subject of talks at the regular monthly meeting of the local section, S. A. E., held this evening in the automotive laboratories of the Carnegie Institute of Technology. Approximately 150 leaders in the transportation field were in attendance, including engineers of the taxicab, motor coach, milk companies and other fleet operators, in addition to automobile distributors, highway patrolmen and city traffic officials.

WASHINGTON, D. C., DEALERS FILL OFFICE VACANCIES

Washington, Jan. 14.—Appointment of two members of the board of directors and a vice-president to fill vacancies caused by recent resignations is announced by the Washington Automotive Trade Association. Joseph B. Trew and Lee E. Butler are the new board members and the office of second vice-president will be filled for the ensuing year by Raphael Semmes.

Major Specifications and Mechanical Details of 1931 Commercial Cars

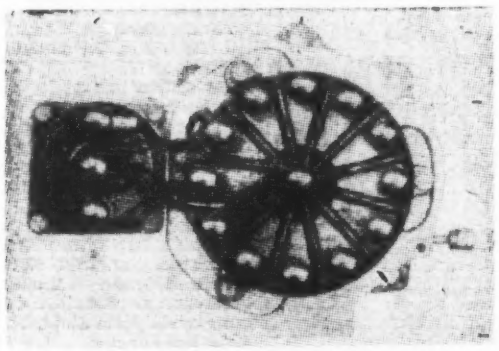
Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyls.	Bore and Stroke	Tax H. P.	Max. Brake H. P. at Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Tires Front	Tires Rear	Standard Tire Sizes
*Am La France Chief	2	3850	Own	6	3¾x5	33.7	65@2100	Pw	Str	Vac	DR	Own	C	4	Tim	Wo	31.2	4	D	156	6200	32x6		32x6D
Am. La France W	3-4	3950	Own 2 R	4	4½x6	28.9	42@1400	CS	Zen	Vac	AB	Own	C	4	Own	2R	47.4	4	R	160	7200	S36x5		S36x5D
*Am. La Fr. Chieft'n	3-4	5500	Own	6	4⅛x5½	40.8	75@1800	Pw	Zen	Vac	DR	Own	C	4	Tim	Wo	28.8	4	D	175	7200	S36x8		36x8D
Am. La France V	5	5500	Own 5 R	4	4¾x6	36.2	50@1200	CS	Zen	Vac	AB	Own	C	4	Own	Wo	54.4	4	R	165	9800	S36x5		S40x6D
Am. La Fr. Big Chief	6	6725	Own	6	4½x6	48.6	50@1200	Pw	Zen	Vac	DR	Own	C	4	Own	2R	32.8	4W	D	226	10600	S40x8		S40x8D
Am. La France U	7½	6000	Own 5 R	4	4¾x6	36.2	50@1200	CS	Zen	Vac	AB	Own	C	4	Own	—	63.5	4	R	165	10500	S36x7		S40x8D
Austin	—	475	Own	4	2.2x3	7.8	———	CS	Til	—	Aut	W-G	U	3	Sal	Sp	—	4	4	75	——	3 75x18		3.75x18
Autocar A	1½-2	3200	Own	6	4 x4¾	38.4	82@2400	Pw	Str	Vac	DR	Br-L 51	U	4	Own	Sp	27.9	4V	R	150	5000	34x7		34x7
Autocar D	2-2½	3500	Own	6	4 x4¾	38.4	82@2400	Pw	Str	Vac	DR	Br-L 51	U	4	Own	2R	33.5	4V	R	150	5300	34x7		34x7D
*Autocar SH	2½-3	4300	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Gra	DR	Own T	U	4	Own	2R	44.0	RV	R	114	6770	34x7		34x7D
Autocar SCH	2½-3	4300	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	4	Own	2R	44.0	RV	D	157	6860	34x7		34x7D
*Autocar H	3	4100	Own	4	4½x5½	32.4	45@1450	CS	Str	Gra	DR	Own T	U	4	Own	2R	48.6	RV	R	114	6770	34x7		34x7D
*Autocar HS	3½	4600	Own	4	4½x5½	32.4	45@1450	CS	Str	Gra	DR	Own T	U	4	Own	2R	54.3	RV	R	114	7900	40x8		40x8D
*Autocar SHS	3-3½	4800	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Gra	DR	Own T	U	4	Own	2R	54.3	RV	R	114	7900	40x8		40x8D
*Autocar SCHS	3-3½	4800	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	4	Own	2R	54.3	RV	D	157	8186	40x8		40x8D
Autocar TEA	3-3½	5350	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	12	Own	2R	101.1	4V	D	192	8900	36x8		36x8D
Autocar TFA	3½-5	6100	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own T	U	12	Own	2R	101.3	4V	D	192	9300	38x9		38x9D
Autocar C	3½-5	5500	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own B	C	4	Own	2R	61.7	RV	D	172	9500	42x9		42x9D
Autocar CG	5	8250	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own B	C	12	Tim	Wo	120	WB	D	196	13000	36x8		36x8B
Autocar F	7½	6800	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Br-L 70	C	7	Tim	Wo	94.0	4V	D	173	11000	36x7S		40x8DS
Autocar G	10	9000	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Br-L 70	C	7	Tim	Wo	100	WB	D	171	13000	36x8		36x8D
Chevrolet	½	355	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	3	Own	Sp	13.61	4	R	109	1880	4.75x19		4.75x19
Chevrolet	1½	590	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	4	Own	Sp	33.46	4	R	157	2890	30x5		30x5D
Chevrolet	1½	520	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	4	Own	Sp	33.46	4	R	131	2560	30x5		32x6
Commerce Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	P30x5		P30x5
Commerce Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	P30x5		DP30x5
Commerce Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	P34x5		DP34x5
Commerce Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4500	32x6P		32x6D
Commerce Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	32x6		36x6D
Commerce Series 40	2½	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	5100	36x6P		36x6D
Commerce Series 60	2½	4580	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7000	36x6P		36x7D
Commerce Series 60	3	4680	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7100	36x6P		38x7D
Commerce Series 80	3½	5260	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	B	D	175	8200	36x6S		36x12S
Commerce Series 80	4	5330	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	B	D	175	8400	36x6S		36x14S
Commerce Series 100	5	5830	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	95.0	B	D	175	9600	36x6S		40x14S
Day Elder 60	1	1195	Con 25 A	6	3⅜x4	27.3	61@3000	Pw	Zen	P	DR	W-G	U	4	Tim	Sp	36.3	4	4	135	3200	20x6.00B		20x6.50B
Day Elder 85	1½	1645	Con 16 C	6	3⅜x4⅝	27.3	65@2700	Pw	Zen	P	DR	W-G	U	4	Tim	Sp	42.3	4	4	135	3750	20x6.00B		20x6.50DB
Day Elder 110	2	2095	Con 16 C	6	3⅜x4⅝	27.3	65@2700	Pw	Zen	P	DR	Br-L	U	4	Tim	Sp	44.9	4	D	156	4600	20x7.00B		20x7.00DB
Day Elder 130	2½	2895	Con 16 R	6	4 x4⅛	38.4	75@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Sp	40.7	4	D	150	4600	20x7.50B		20x9.00DB
Day Elder 160	3	3695	Con 18 R	6	4 x4½	38.4	82@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Wo	36.1	4	D	156	6300	20x7.50B		20x9.00DB
Day Elder 200	4	4295	Con 18 R	6	4 x4½	38.4	82@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Wo	43.5	4	D	156	7400	20x9.00B		20x9.00B
Day Elder 240	5	5500	Con 21 R	6	4⅜x4¾	45.9	100@2800	Pw	Zen	P	DR	Br-L	C	4	Tim	Wo	50.8	4	D	162	9300	38x9P		38x9DP
Day Elder 285	8	6000	Con 21 R	6	4⅜x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	71.2	6	D	164	12000	20x8.25B		20x8.25DB
Day Elder 315	10	7500	Con 21 R	6	4⅜x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	79.9	4	D	164	12500	20x9.00B		20x9.00DB
Day Elder 402	12	9000	Con 16 H	6	4⅜x5¾	54.2	127@2300	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	84.6	4	D	164	14000	20x9 75B		20x9.75DB
Diamond T 200	1	675	Buda H 199	4	3¾x4½	22.5	57@3000	Pw	Zen	P	Aut	W-G	U	4	Cla	Sp	—	4H	B	128½	3050			
Diamond T 216	1	695	Her JXA	6	3⅛x4¼	27.3	———	Pb	Zen	P	Aut	W-G	U	4	Cla	Sp	—	4H	B	135⅛	3300	20x6.50B		20x6.50B
Diamond T 291	1½	1475	Her WXA 2	6	3½x4½	29.4	58@2400	Pb	Zen	P	Aut	W-G	U	4	Cla	Sp	—	4H	D	156¼	4400	20x6.50B		20x6.50DB
Diamond T 303	2	1745	Her WXB	6	3⅜x4½	33.7	66@2400	Pb	Zen	P	Aut	Cov	U	4	Cla	Sp	—	4HV	D	159¾	5000	20x7.00B		20x7.00DB
Diamond T 551	2½	2250	Her WXC	6	4 x4½	38.4	75@2400	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	—	4HV	D	168	5600	20x7.50B		20x7.50DB
Diamond T 504	2½	2675	Her WXC	6	4 x4½	38.4	75@2400	Pb	Zen	P	Aut	Cov	U	4	Tim	2R	—	4HV	D	176½	6400	20x8.25B		20x8.25DB
Diamond T 506	2½	3000	Her WXC 3	6	4¼x4½	43.3	84@2200	Pb	Zen	P	Aut	Cov	U	5	Tim	2R	—	4HV	D	172½	6400	20x8.25B		20x8.25DB
Diamond T 603	3	3300	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	P	Aut	Cov	U	5	Tim	2R	—	4HV	D	169	7500	20x9.00B		20x9.00DB
Diamond T 606	3	3440	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	P	Aut	Cov	U	5	Tim	2R	—	4HV	D	186	7500	20x9.00B		20x9.00DB
Diamond T 750	4	4800	Her YXC 4	6	4⅝x5¼	51.3	———	Pb	Zen	P	Aut	Cov	C	5	Tim	2R	—	4W	D	178	——	22x9.75B		22x9.75DB
*Diamond T 891	4	4140	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	P	Aut	Br-L	C	7	Own	Wo	—	6HV	D	189½	8300	36x8P		4P 36x8
*Diamond T 1200	6	5600	Her YXC 2	6	4½x4¾	48.6	98@2200	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	180	11000	34x7P		4wh 34x7D
*Diamond T 1600	8	6220	Her YXC 3	6	4⅝x4¾	51.3	106@2200	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	190	11700	36x8P		4wh 36x8D
*Diamond T 1601	8	7500	Wak 6RB	6	5 x5¾	60.0	1266@1800	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	194	12500	36x8P		4wh 36x8D
Dodge Bros. UF10	½	435	Own	4	3⅝x4¾	21.2	48@2800	Pb	Car	P	DR	Own	U	3	Own	Sp	14.28	4	D	109	1855	5.00x19		5.00x19
Dodge Bros F10	½	515	Own	6	3⅛x4⅛	23.4	61@3400	Pb	Car	P	DR	Own	U	3	Own	Sp	14.28	4	D	109	1960	5.25x19		5.25x19
Dodge Bros. U1	¾	695	Own	4	3⅝x4¼	21.3	45@2800	Pb	Car	Vac	NE	Own	U	4	Own	Sp	21.66	4	D	124	2260	5.50x20B		5.50x20B
Dodge Bros. DA1	¾	795	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	Vac	NE	Own	U	4	Own	Sp	36.83	4	D	140	2955	30x5		30x5
Dodge Bros. UF30	1½	595	Own	4	3⅝x4⅜	21.0	48@2800	Pb	Car	P	DR	Own	U	4	Own	Sp	37.17	4	D	136	2665	6.00x20		32x6
Dodge Bros. F30	1½	695	Own	6	3⅛x4⅛	23.4	61@3400	Pb	Car	P	DR	Own	U	4	Own	Sp	37.17	4	D	136	2765	6.00x20		32x6
Dodge Bros. F35	1½	1425	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	P	DR	Own	U	4	Own	Sp	41.43	4	D	140	3780	6.00x20		6.00x20D
Dodge Bros. F36	1½	1485	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	P	DR	Own	U	4	Own	Sp	41.43	4	D	165	3972	6.00x20		6.00x20D
Dodge Bros. F40	2	1995	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	43.73	4	D	150	5175	6.50x20		6.50x20D
Dodge Bros. F41	2	2085	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	43.75	4	D	165	5211	6.50x20		6.50x20D
Dodge Bros. F60	3	2645	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	146	5543	32x6		32x6D
Dodge Bros F61	3	2575	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	170	5789	32x6		32x6D
Dodge Bros F62	3	2695	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	195	5901	32x6		32x6D
Durant	*¾	495	Con	4	3¾x4½	18.2	———	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	16.16	4	4	107	1670	28x4.75		28x4 75
Essex Commercial	¾	445	Own	6	2¾x4½	18.2	———	CS	Mar	Vac	Aut	Own	U	3	Own	Sp	17.8	4	4	110	2150	30x5		31x5.50
Federal D	1½	830	Con W 10	4	3⅞x4¼	24.0	48@2500	Pb	Zen	P	DR	W-G T9	U	4	Cla	Sp	40.8	4	Tr	131	3185	6.00x20		32x6
Federal E6	1½	1090	Con 17 E	6	3⅜x4	27.3	60@2600	Pb	Zen	Vac	DR	W-G T9	U	4	Cla	Sp	34.6	4	Tr	132	3260	6.00x20		32x6
Federal E	1½	1525	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	P	DR	Own	U	4	Tim	Sp	24.3	4	Tr	132	3765	30x5		30x5D
Federal A6	2	1855	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Cla	Sp	38.5	4	Tr	151	4580	32x6		32x6D
Federal A6T	2½	2185	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Tim	Sp	41.3	4	Tr	151	4950	32x6		32x6D
Federal A6TW	2½	2360	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Tim	Wo	42.0	4	Tr	151	4950	32x6		32x6D
Federal T10B	2½-3	2740	Con 16 R	6	4 x4⅛	38.4	75@2200	Pb	Zen	P	DR	Own	C	4	Tim	Sp	36.3	4	Tr	165	6550	34x7		34x7D
Federal T10W	2½-3	2915	Con 16 R	6	4 x4⅛	38.4	75@2200	Pb	Zen	P	DR	Own	C	4	Tim	Wo	44.0	4	Tr	165	6550	34x7		34x7D
Federal U6	3-3½	3860	Con 18 R	6	4 x4½	38.4	85@2200	Pb	Str	P	DR	Br-L 55	C	7	Tim	Wo	64.6	4	D	165	7220	34x7		34x7D
Federal 4C6A	4-5	4735	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	73.6	4	D	192	8330	36x8		36x8D
Federal 4C6AB	4-5	4960	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	73.6	4	D	192	8850	36x8		36x8D
*Federal U6SW	6	6000	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	71.3	6	Tr	201	9850	34x7		34x7D
*Federal U6SWAB	6	6500	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zelf	P	DR	Br-L 55	C	7	Tim	Wo	71.3	6	Tr	201	9900	34x7		34x7D
Federal X8	7½	5085	Con B 7	4	5 x6	40.0	61@1350	Pw	Zen	Vac	AB	Br-L 60	C	7	Tim	Wo	110.9	R	D	162	9750	36x6S		40x14S
Federal X8R	7½	5810	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	DR	Br-L 60	C	7	Tim	Wo	110.9	R	D	162	10000	40x8		40x8D
*Federal 4C6SW	8	7500	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	80.8	6	Tr	231	11500	36x8		36x8D
Ford AA	1½	510	Own	4	3⅞x4¼	24.0	40@2200	Sp	Zen	Gra	Own	Own	U	4	Own	St	42.24	4	R	131½	2725	6.00x20		32x6
Ford AA	1½	535	Own	4	3⅞x4¼	24.0	40@2200	Sp	Zen	Gra	Own	Own	U	4	Own	St	42.24	4	R	157	2811	6.00x20		6.00x20
F W D—H	1½	3300	Wis S U	4	4 x5	25.6	50@2000	Pb	Zen	Vac	Eis	Cotta	C	4	Own	St	38.1	4	R	121	5300	34x7		34x7
F W D—H6	2	3425	Wak	6	3⅜x4½	29.4	72@2500	Pb	Zen	Vac	Eis	Br-L	U	4	Own	St	35.0	4	R	133	5500	34x7		34x7
F W D—BTL	2	3900	Wak	6	3⅜x4¾	33.7	72@2500	Pb	Zen	Vac	Eis	Br-L	C	7	Own	St	84.7	4	R	137½	6000	36x8		36x8
F W D—HH6	2½	4000	Wak	6	3¾x4¾	33.7	72@2500	Pb	Zen	P	Eis	Br-L	C	7	Own	St	101.0	4	R	138	6400	36x8		36x8
F W D—R	3	4200	Own	4	4¾x5½	36.1	56@1350	Pb	Str	Gra	Eis	Own	C	3	Own	St	35.6	4	R	124	6460	36x6S		36x6S
F W D—BT	3-3½	4742	Wak	6	4⅛x5⅛	40.8	92@2300	Pb	Zen	Vac	Eis	Own	C	5	Own	St	101.0	4	R	137¾	7700	40x7S		40x58D
F W D—CU6	3½	5120	Wak	6	4⅛x5⅛	40.8	92@2300	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7200	36x6S		36x8S
F W D—SSU	4	5220	Wak	6	4⅜x5⅛	45.9	102@2200	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7600	38x9		38x9
F W D—M5	5	7600	Wak	6	4⅜x5⅛	45.9	102@2200	P	Zen	P	Aut	Br-L	U	8	Wis	2R	193.1	4V	D	165	11000	12.75x20B		12.75x20B
*F W D—X6	6	6500	Wak	6	4⅜x5⅛	45.9	102@2200	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	*	4	170	9500	36x8		36x8
F W D—M7	7½	8700	Wak	6	5 x5¾	60	127@2000	P	Zen	P	Aut	Br-L	U	8	Wis	2R	193.1	4V	D	165	13000	40x10P		40x10DP
Garford Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	P30x5		P30x5
Garford Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	P30x5		DP30x5
Garford Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	P34x5		DP34x5
Garford Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4500	32x6		D32x6
Garford Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	36x6		D36x6
Garford Series 40	2½	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	5100	36x6		D36x6
Garford Series 60	2½	4580	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7000	36x6		D36x6
Garford Series 60	3	4680	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7100	36x6		D38x7
Garford Series 80	3½	5250	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	2	D	175	8200	S36x6		S36x12
Garford Series 80	4	5330	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	2	D	175	8400	S36x6		S36x14
Garford Series 100	5	5830	Bud B A 6	6	4¼x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	95.0	2	D	175	9600	S36x6		S40x14
Gen. Mot. T11-1001	3800	625	Pontiac	6	3⅛x3⅞	26.3	58@3000	Pb	Mar	P	DR	Own	U	3	Pont	Sp	14.7	4	4	109¾	1980	5.00x19B		5.50x19B
Gen. Mot. T15-1501	5400	645	Pontiac	6	3⅛x3⅞	26.3	58@3000	Pb	Mar	P	DR	Own	U	3	Tim	Sp	16.14	4	4	130	2625	5.50x20B		5.50x20B
Gen. Mot. T17-1701	5500	665	Pontiac	6	3⅛x3⅞	26.3	58@3000	Pb	Mar	P	DR	Own	U	3	Tim	Sp	16.04	4	4	130	2650	6.50x20B		6.50x20B
Gen. Mot. T17-1707	6500	680	Pontiac	6	3⅛x3⅞	26.3	58@3000	Pb	Mar	P	DR	Own	U	3	Tim	Sp	16.04	4	4	130	2670	5.50x20B		32x6
Gen. Mot. T19-2201	6500	745	Pontiac	6	3⅛x3⅞	26.3	58@3000	Pb	M

Major Specifications and Mechanical Details of 1931 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyls.	Bore and Stroke	Tax H. P.	Max. Brake H. P. at Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For.	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Gen. Mot. T19-2214	8500	845	Pontiac	6	3½x3⅞	26.3	58@3000	Pb	Mar	P	DR	Mun	U	4	Tim	Sp	34.45	4	D	130	2925	30x5	30x5D
Gen. Mot. T25-2501	6800	1235	Buick	6	3⅛x4⅝	28.3	76@2500	Pb	Mar	P	DR	Mun	U	4	Tim	Sp	29.62	4	D	130	3375	6 00x20B	7.50x20B
Gen. Mot T25-2514	9000	1320	Buick	6	3⅛x4⅝	28.3	———	Pb	Mar	P	DR	Mun	U	4	Tim	Sp	29.62	4	D	130	3580	7.00x20B	700x20DB
Gen. Mot T30-3201	10000	1545	Buick	6	3⅛x4⅝	28.3	76@2500	Pb	Mar	P	DR	Mun	U	4	Eat	Sp	28.6	4	D	141	4490	30x5	30x5D
Gen. Mot T30-3304	12500	1700	Buick	6	3⅛x4⅝	28.3	———	Pb	Mar	P	DR	Mun	U	4	Eat	Sp	28.6	4	D	141	4705	32x6	32x6D
Gen. Mot T42-4201	12000	1845	Buick	6	3⅛x4⅝	28.3	76@2500	Pb	Mar	P	DR	Mun	U	4	Eat	Sp	33.38	4	D	141	4725	32x6	32x6D
Gen. Mot T42-4304	15000	1975	Buick	6	3⅛x4⅝	28.3	———	Pb	Mar	P	DR	Mun	U	4	Eat	Sp	33.38	4	D	141	4910	34x7	34x7D
Gen. Mot. T44-4401	12000	1985	Buick	6	3⅛x4⅝	28.3	76@2500	Pb	Mar	P	DR	Mun	U	4	Eat	2R	40.89	4	D	141	4825	32x6	32x6D
Gen. Mot. T44-4404	16000	2095	Buick	6	3⅛x4⅝	28.3	76@2500	Pb	Mar	P	DR	Mun	U	4	Eat	2R	40.89	4	D	141	5095	34x7	34x7D
Gen. Mot T60-6207	22000	3230	Buick	6	3¾x5	33.7	———	Pb	Mar	P	DR	Mun	U	4	Tim	Wo	52.53	4	D	154¼	7065	9.00x20B	9.75x20DB
Gen Mot. T60-6202	16500	3035	Buick	6	3¾x5	33.7	94@2500	Pb	Mar	P	DR	Mun	U	4	Tim	Wo	52.53	4	D	154¼	6925	34x7	34x7L
Gen. Mot. T82-8202	19000	3795	Own	6	3¾x5	33.7	94@2500	Pb	Mar	P	DR	Mun	U	12	Tim	Wo	142.5	4	D	155	7500	9.00x20B	9.00x20DB
Gen. Mot. T82-8206	24000	4055	Own	6	3¾x5	33.7	94@2500	Pb	Mar	P	DR	Mun	U	12	Tim	Wo	142.5	4	D	155	7880	9.75x20B	10.50x20DB
Gen. Mot. T90-9001	23000	5285	Own	6	3¾x5	33.7	94@2500	Pb	Mar	P	DR	Mun	U	12	Tim	Wo	128.6	WR	D	185¼	9400	7.50x20B	7.50x20DB
Gen. Mot. T90-9004	28000	5455	Own	6	3¾x5	33.7	94@2500	Pb	Mar	P	DR	Mun	U	12	Tim	Wo	128.6	WR	D	185¼	9775	8.25x20B	8.25x20DB
Gramm AX-4	1*	795	Con W-10	4	3⅞x4	24	50@2800	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	36.3	4	D	131	2900	6.50x20	6.50x20
Gramm AX-6	1	895	Con 25 A	6	3⅜x4	27.3	61@3000	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	36.3	4	D	131	2900	6.50x20	6.50x20
Gramm BX-4	1½	895	Con W-10	4	3⅞x4¼A	24	50@2800	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	36.3	4	D	131	3100	6.00x20	6.00x20C
Gramm BX-6	1½	995	Con 25 A	6	3⅜x4	27.3	61@3000	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	36.3	4	D	131	3100	6.00x20	6.00x20L
*Gramm B	1¾	1495	Lyc 4 SL	6	3¼x4½	25.3	61@2900	Pb	Zen	Vac	Aut	Cov	U	4	Tim	Sp	34.3	4	D	140	3800	6.50x20	6.50x20D
*Gramm C	2	1795	Lyc ASA	6	3⅝x4½	31.54	82@2600	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	31	4	D	160	4820	7.00x20	7.00x20D
Gramm CX	2	1095	Con W-11	4	4¼x4¼	27.2	55@2600	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	37	4	D	131	3300	6.50x20	6.50x20D
Gramm CX	2	1295	Con 16 C	6	3⅜x4⅛	27.3	70@3000	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	37	4	D	131	3300	6.50x20	6.50x20D
*Gramm D	2½	1995	Lyc ASD	6	3¾x4½	33.7	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	33	4	D	160	5160	7.50x20	7.50x20D
*Gramm E	3	2595	Lyc T8	6	3½x5	36	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	35	4*	D	160	5500	8.25x20	8.25x20D
*Gramm EY	3	3595	Con 26 R	6	4¼x4¾	40.80	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	30	4	D	190	6750	7.50x20	7.50x20D
*Gramm T-38	3	3595	Lyc T8	6	3½x5	36	90@2200	Pb	Zen	P	Aut	Ful	U	4	Wis	2R	45	D	R	153	7200	36x58	36x10S
*Gramm O-45	4	3995	Lyc T8	6	3½x5	36	85@2200	Pb	Zen	P	Aut	Ful	C	8	Wis	2R	75.8	D	R	153	7700	36x58	36x12S
*Gramm GY	4	4345	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	Aut	Cov	U	4	Wis	2R	28	4	D	210	7200	8.25x20	8.25x20D
Gramm GW	4	5175	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	Aut	Cov	U	4	Wis	2R	—	4W	D	157	8900	9.00x20	9.00x20D
*Gramm O-60	5	4745	Lyc T8	6	3½x5	36	———	Pb	Zen	P	Aut	Ful	C	8	Wis	2R	78.4	D	R	153	8800	36x6S	36x14S
*Gramm HY	5	6845	Con 16 H	6	4¾x5¾	54.15	127@2300	Pb	Zen	P	Aut	Ful	U	4	Wis	2R	25.2	4	D	236	9600	36x8	36x8D
International AW1	¾	720	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Own	Sp	17.4	4	2	136	2620	5.25x20	5.25x20
Internat'n'l Sp. Del.	¾	720	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Eat	Sp	60.3	4	2	124	2200	5.25x30	5.25x30
Intern'l 6 Spd. Spec.	1	820	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Eat	Sp	52.6	4	2	124	2430	30x5	30x5
International S24	1¼	1160	Lyc C T	4	3¾x5	22.5	43@2350	Pw	Zen	Vac	DR	Own	U	3	Eat	Sp	21.3	4	2	130	3200	30x5	30x5
International S26	1¼	1310	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	3	Eat	Sp	21.3	4	2	130	3250	30x5	30x5
International AW2	1½	820	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Own	Sp	60.3	4	2	136	2980	5.50x20	6.00x20
International SF34	1½	1450	Lyc C T	4	3¾x5	22.5	43@2350	Pw	Zen	Vac	DR	Own	U	3	Eat	Sp	22.6	4	2	140	3520	30x5	32x6
International AL3	1½	1450	Lyc SLH	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	W-G	U	4	Own	Sp	42.9	4	2	138	4300	6.00x20	6.00x20L
International SF36	1½	1600	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	3	Eat	Sp	22.6	4	2	140	3570	30x5	32x6
International SD44	2	1590	Lyc C T	4	3¾x5	22.5	43@2350	Pw	Zen	Vac	AB	Own	U	4	Eat	Sp	40.6	4	2	117	3700	30x5	32x6
International SD46	2	1740	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	AB	Own	U	4	Eat	Sp	40.6	4	2	117	3750	30x5	32x6
International SF46	2	1950	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	4	Eat	Sp	40.6	4	2	140	4000	32x6	32x6D
International A4	2	1985	Own F B B	6	3⅜x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	47.8	4	2	145	5070	32x6	32x6D
International HS54	2½	3850	Hall-S 151	4	4¼x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Eat	2R	60.5	4	4	148	8000	36x58	36x8S
International HS54C	2½	3850	Hall-S 151	4	4¼x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	63.8	4	4	148	8665	36x58	36x10S
International W1	2½	3850	Hall-S 151	4	4¼x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Own	2R	60.5	4	4	148	8300	36x58	36x8S
International A5	3	2550	Own F B B	6	3⅜x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	52.6	4	2	156	5606	34x7	34x7D
International A6	3	2675	Own B B	6	3⅜x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	62.5	4	2	156	5750	34x7	34x7D
International HS74	3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Eat	2R	70.5	4	4	160	10700	36x58	40x12S
International HS74C	3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	79.1	4	4	160	11000	36x6S	40x12S
International W3	3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	2R	70.5	4	2	160	10125	36x6S	40x12S
Internat'n'l HS104C	5	5500	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	90.5	4	4	160	11095	36x6S	40x14S
La France-Rep. A1	6000	795	Lyc	6	3 x4¾	21.5	60@2500	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	36.1	4	Tr	132	3000	5.50x20	32x6
La France-Rep. C1	7500	1295	Lyc	6	3¼x4½	25.4	61@2750	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	29.1	4	Tr	144	3300	6.00x20	32x6
La France-Rep. D1	9000	1595	Lyc	6	3¼x4½	25.4	61@2750	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	37.9	4	Tr	144	3725	30x5	30x5D
La France-Rep F2	13000	2395	Lyc	6	3⅝x5	31.5	83@2800	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	40.1	4	D	174	5400	32x6	32x6D
La France-Rep. H2	15000	2985	Lyc	6	3⅝x5	36.0	85@2300	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	44.5	4	D	174	5850	34x7	34x7D
La France-Rep. 35-2	24000	5600	Wak	6	4½x5¾	48.6	98@1850	Pb	Zen	Vac	Aut	Ful	U	4	Wis	2R	45.4	4	D	174	8200	38x9	38x9D
La France-Rep. M2	20000	4000	Wak	6	4⅝x5½	46.0	97@2000	Pb	Zen	Vac	Aut	Ful	U	5	Wis	2R	62.3	4	D	174	6900	36x8	36x8D
Mack BL	1	2500	Own	6	3¼x5	25.39	63@2800	Pw	Str	Vac	NE	Own	U	4	Own	Sp	Opt	4	D	148	———	B6.00x20	DB6.00x20
††Mack BG	1½	3000	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	Sp	Opt	4	D	156	———	32x6	D32x6
Mack AB	2½-3	3950	Own	4	4¼x5	28.9	60@2200	Pb	Str	Gra	RB	Own	U	4	Own	2R	Opt	R	D	2-Opt	———	36x4S	36x8S
††Mack AB	2½-3	3500	Own	4	4¼x5	28.9	60@2200	Pb	Str	Gra	RB	Own	U	4	Own	Ch	Opt	R	D	2-Opt	———	36x4S	36x8S
Mack AB	2½-3	4750	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	2R	Opt	R	D	2-Opt	———	34x7	D34x7
††Mack AB	2½-3	4300	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	Ch	Opt	R	D	2-Opt	———	34x7	D34x7
††Mack B	3-4	5250	Own	6	4 x5½	38.4	100@2300	Pb	Str	Vac	NE	Own	U	4	Own	2R	Opt	4	D	2-Opt	———	36x8	D36x8
††Mack BC	3½-5	5500	Own	6	4 x5½	38.4	100@2300	Pb	Str	Vac	NE	Own	U	4	Own	Ch	Opt	4	D	2-Opt	———	36x8	36x8D
††Mack BJ	3½-5	6150	Own	6	4½x5½	48.6	126@2200	Pb	Str	Vac	L-N	Own	C	4	Own	2R	Opt	4	D	3-Opt	———	36x8	36x8D
††Mack AK	3½-5	5150	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	4	J	3-Opt	———	36x5S	36x5DS
††Mack AK	3½-5	5250	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	C	4	Own	2R	Opt	4	D	3-Opt	———	36x5S	36x5DS
††Mack AC	3½-5	4950	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	———	36x5S	40x10S
††Mack AK	3½-5	6450	Own	6	4½x5½	48.6	126@2200	Pb	Str	Vac	L-N	Own	C	4	Own	2R	Opt	4	D	3 Opt	———	10.50x22B	10.50x22DB
††Mack AC	5½-7	5500	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	———	36x6S	40x12S
††Mack AC	5½-7	6550	Own	6	4½x5½	48.6	126@2200	Pb	Str	Vac	L-N	Own	J	4	Own	Ch	Opt	4	J	3 Opt	———	10.50x24B	10.50x24DB
††Mack AC	7½	6000	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	———	36x7S	40x14S
††Mack AP	7½	9500	Own	6	5 x6	60.0	150@2000	Pb	Str	Gra	NE	Own	J	4	Own	Ch	Opt	R	J	191	———	36x7S	40x8DS
††Mack AC 6-wheel	10	7500	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	4R	J	3-Opt	———	36x7S	40x12S
††Mack AP 6-wheel	10	12000	Own	6	5 x6	60.0	150@2000	Pb	Str	Gra	NE	Own	J	4	Own	Ch	Opt	4R	J	3-Opt	———	36x7	40x12S
Paige	½	895	Own	6	3⅛x4½	23.44	66@3200	Pb	DL	P	DR	—	U	3	—	Sp	14.27	4	Tr	115	———	5.50x18B	5.50x18B
Relay Series 15 AA	¾	1370	Con 17 E	6	3⅜x4	27.3	52@2200	Pb	Str	Vac	Aut	W-G	U	4	Own	2R	38.4	4	D	131	3750	30x5P	30x5P
Relay Series 15 AB	1	1400	Con 17 E	6	3⅜x4	27.3	52@2200	Pb	Str	Vac	Aut	W-G	U	4	Own	2R	38.4	4	D	131	3800	P30x5	P30x5
Relay Series S 11	1	1700	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	25.5	4	D	142	4050	30x5P	30x5P
Relay Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	30.0	4	D	162	4500	30x5P	30x5DP
Relay Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5300	34x5P	34x5DP
Relay Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5500	36x6	D36x6
Relay Series 50	2	3860	Bud D W 6	6	3¾x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	6800	36x6	D36x6
Relay Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	30.0	4	D	162	4700	32x6DP	32x6DP
Relay Series 40	2½	3275	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5700	36x6	D36x6
Relay Series 50	2½	4000	Bud D W 6	6	3¾x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	7000	36x6	D38x7
Relay Series 60	2½	4555	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7350	36x6	D36x6
Relay Series 50	3	4130	Bud D W 6	6	3¾x5	33.7	83@2100	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	7200	36x6	D40x8
Relay Series 60	3	4595	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7500	36x6	D38x7
Relay Series 80	3	5170	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8400	36x6	S40x10
Relay Series 60	3½	4745	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7800	36x7	D40x8
Relay Series 80	3½	5330	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8600	36x6	S40x12
Relay Series 80	4	5380	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8800	38x7	S40x14
Relay Series 50 SW	5	5505	Bud D W 6	6	3¾x5	33.7	83@2100	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	54.7	6	D	152	8600	36x6P	36x6DP
Relay Series 100	5	6615	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Str	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	230	10000	9.00x24	D9.00x24
Relay Series 60 SW	7	6545	Bud B A 6	6	4⅛x5⅛	40.8	100@2200	Pb	Zen	Vac	Aut	Ful	U	5	Own	2R	63.6	6	D	175	12000	38x7P	40x8DP
Reo 15 Junior	½	785	Con '19 E	6	3⅜x4	27.3	60@2800	Pb	Sch	P	DR	W-G	U	3	Sal	Sp	14.63	4	Tr	115	2290	6.00x18	6.00x18
Reo D F 129	1	1095	Own C A	6	3⅜x5	27.3	85@3200	Pb	Sch	Vac	DR	Own	U	3	Own	Sp	17.1	4	Tr	129	3050	6.00x20	32x6
Reo D F	1	1095	Own C A	6	3⅜x5	27.3	85@3200	Pb	Sch	Vac	DR	Own	U	3	Own	Sp	17.1	4	Tr	135	3200	6.00x20	32x6
Reo F A	1½	1295	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	137	3525	6.00x20	32x6
Reo F E	1½	1395	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	152	3700	6.00x20	32x6
Reo F F	1½	1395	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	156	3750	6.00x20	32x6
Reo F H	2	1595	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	37.6	4	Tr	142	4165	32x6	32x6D
Reo F C	2	1645	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	37.62	4	Tr	152	4025	32x6	32x6D
Reo F D	2	1745	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	37.62	4	Tr	168	4075	32x6	32x6D
Reo G A	3	2035	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	163	4625	32x6	32x6D
Reo G C	3	2140	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	179	4850	32x6	32x6D
Reo G D	3	2085	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	78.1	4	Tr	144	4570	32x6	32x6D
Reo G C S	3	2375	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	210	5320	32x6	32x6D
Reo G B	3	2290	Own C P	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	40.52	4	Tr	179	———	7.50x20	7.50x20
Rugby T	½	655	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Own	U	3	Own	Sp	15.6	4	4	—	2160	29x5	29x5
Rugby 6-15	1	865	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Br-L	U	4	Sal	Sp	34.49	4	Tr	135	2900	5.50x20	32x6
Rugby 615	1½	930	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Br-L	U	4	Sal	Sp	34.49	4	Tr	135	3000	5.50x20	30x5D
Selden 17 C	1½	1500	Con	6	3⅜x4	27.3	61@3000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	142	3900	32x6	32x6
Selden 317 C	1½	1610	Con	6	3⅜x4⅝	27.34	65@2760	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	142	3900	32x6	32x6
Selden 37 C	2	1935	Con	6	3⅜x4⅝	27.34	65@2760	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	151	4800	32x6	32x6D
Selden 39 C	2½	2920	Con	6	4 x4½	38.4	72@2400	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	164	6800	32x6	32x6D
Selden 47 C B	3½	3785	Con	6	4 x4½	38.4	85@2400	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	171	7200	34x7	34x7D
Selden 47 C D	4	4435	Con	6	4 x4½	38.4	82@2400	Pb	Str	Vac	Aut	Br-L	U	5	Wis	2R	—	4	D	171	7000	36x8*	36x8D
Selden 67 C	5	4975	Con	6	4⅜x4¾	45.94	100@2400	Pb	Str	Vac	Aut	Br-L	C	7	Wis	2R	—	4	D	171	8700	36x8	36x8D
Selden 77	7	7365	Con	6	4¾x5¾	54.15	———	Pb	Str	Vac	Aut	Br-L	C	7	Wis	2R	—	4	D	178	12000	36x7	40x7D
Service Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	P30x5	P30x5
Service Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	P30x5	DP30x5
Service Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	P34x5	DP34x5
Service Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4500	32x6	D32x6
Service Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	36x6	D36x6
Service Series 40	2½	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	5100	P36x6	D36x6
Service Series 60	2½

Production - - Engineering - - Factory -

Delco Develops a New Distributor for Aircraft



New Delco Distributor for Aircraft Engines

Delco Aviation Corporation, Dayton, O., a division of Bendix Aviation Corporation, has recently developed a new aircraft battery ignition distributor.

The Delco aircraft battery ignition unit is made for any number cylinders and is designed to operate on twelve volts. The breaker is of the pivotless type, having adjustments for contact separation and for contact pressure, and insures a more accurate timing of the spark. The moving parts are light, which increases the life of the contacts and rubbing block and permits high speed operation.

Timing of the distributor is accomplished by means of a serrated collar between the cam and shaft, which has twenty-three teeth on one side and twenty-four on the other. The distributor head and rotor are of bakelite and are of the jump spark type. Clearances between any exposed point in the high tension circuit and ground are within the Bureau of Standards recommendations to insure reliable ignition at high altitudes.

Coils are of the ironclad type and are designed especially for aircraft use, having maximum output and minimum weight. They are mounted integral with the distributor. The entire unit is shielded to reduce radio interference. Ball bearings are used for the cam and drive shafts. The following constitute the types developed: AX-32774 is an eight-cylinder unit driven at one-half engine speed. The weight complete is 4½ pounds, with aluminum housings. AD9-1201 is a nine-cylinder unit for Wasp and Hornet engines. This unit is driven at 1⅛ engine speed, and weighs 3 pounds 2 ounces, with housings of magnesium alloy. AD12-1302 is a twelve-cylinder unit for Curtiss Conqueror engines. It is drive at one-half engine speed and weighs 4 pounds 12 ounces, with housings of magnesium alloy. AD9-1101 is a nine-cylinder flange mounting type driven at 1⅛ engine speed. The weight of this unit is 5 pounds 8 ounces.

NORTHWEST S. A. E. DISCUSSES BRAKES

Seattle, Wash., Jan. 14.—Brake problems were discussed at the January meeting of the Society of Automotive Engineers, Northwest section, held this week at the New Washington Hotel.

Don F. Gilmore presided, while the principal address was by John M. Wright, Northwest district manager for Russell Manufacturing Company. Other speakers were C. A. O'Neill of Bendix Service Corporation; Martin M. Fisher of Barnes & Fisher Company, and John T. Friedli of the Friedli Recording Device Company. All four talks related to various phases of motor car, truck and bus braking problems.

Mr. O'Neill explained the working of the Cowdrey brake testing machine, its operation and results. Mr. Fisher described the B. & F. brake lining grinder, a new Seattle product, and demonstrated its working for grinding shoe linings for drums 10 to 24 inches in diameter and 1 to 7 inches in width, so as to provide as nearly as possible 100 per cent. contact between the brake shoe and the brake drum.

Mr. Friedli explained the mechanism, workings and purposes of the Friedli brake testing instrument, which had been indorsed by officials throughout the West and in many states to the east. This is also a Seattle product.

VAPOR LOCK STUDIED BY BUREAU OF STANDARDS

Summary of findings in tests to discover how to eliminate overheated gasoline in the fuel system of motor vehicles will be presented by the Bureau of Standards of the Department of Commerce to the Society of Automotive Engineers at its annual meeting to be held at Detroit, the bureau announced.

The boiling of gasoline in the fuel system of automobiles, which is termed "vapor lock," was found to be caused, in some instances, by poorly designed fuel systems in various types of motor vehicles, according to the announcement, which follows in full text:

"During the last few years it has been customary for many of the large oil companies to sell seasonal grades of gasoline, one grade for summer use and another grade for winter use. The winter gasoline is more volatile to enable easier engine starting during the cold weather. If a warm spell occurs during the spring and fall during the period while the winter gasoline is being sold, the gasoline in the fuel system of an automobile or bus may become sufficiently warmed by heat from the engine to cause it to boil.

"This boiling of the gasoline in the fuel system, technically called vapor lock, is very annoying for it causes the engine to run erratically or stop entirely, after which it is necessary to allow the engine to cool before it will start again. While vapor lock is most annoying during the spring and fall, it also occurs in some cars during the hot weather when using summer gasolines.

"Vapor lock may be caused either by too volatile a gasoline or by the fuel system being so poorly designed as to permit excessive heating of the gasoline flowing through it. Previous work at the Bureau of Standards has shown how to determine whether the fuel is too volatile, and many oil companies are controlling the volatility of their gasoline by this means. However, little has been known about how hot the gasoline gets in fuel systems of automobiles or buses.

"Accordingly, during the last summer and fall, the bureau, in co-operation with a number of automobile and oil companies, made extensive gasoline temperature measurements in cars and buses running under various conditions. It was found that the gasoline temperatures were much higher than necessary in a number of cases because of poor design of the fuel system.

"A summary of the information obtained in these tests, together with suggestions regarding improvements in the design of fuel systems on automobiles and buses is being presented to the Society of Automotive Engineers at their annual meeting to be held in Detroit during the third week in January. While some automobile manufacturers have greatly improved the fuel systems on their cars for 1931, it is hoped that the results of the bureau's tests may stimulate others to make similar improvements. If this is done, the frequency of vapor lock troubles will be greatly reduced during the coming warm weather."

ANNOUNCES NEW TYPE BATTERY CONNECTOR

Newtype Battery Connector

New Type Connector Corporation, New York city, announces a new battery terminal connector, which features a series of gripping members which, it is claimed, makes a positive contact entirely around the binding post. In addition it covers the binding post top. The new connector is made of a non-corrosive lead base metal alloy. It is said to be finger operated and no tools are required to remove the connector.

Major Specifications and Mechanical Details of 1931 Commercial Cars

(Continued from Page 9)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Max. Brake H. P. Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For.	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Standard Tire Sizes Rear
Studebaker GN-N	4000	1245	Own	6	3⅜x4½	27.3	68@3200	Pb	Str	P	DR	Cla	U	4	Cla	Sp	33.5	4	D	146	3265	30x5	32x6
Studebaker 77	12500	2895	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	158	5030	7.00x20	7.00x20D
Studebaker 88	12500	3295	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	184	5200	7.50x20	7.50x20D
Studebaker 99	14000	3795	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	184	5680	7.50x20	7.50x20D
Whippet 96 A	½	360	Own 96 A	4	3⅛x4¾	15.6	40@3200	Pw	Til	Vac	Aut	Own	U	3	Own	Sp	15.84	4	B	103¼	1665	4.75x19	4.75x19
White 15 B	——	1545	Own GKA	4	3¾x5½	22.5	31@1600	CS	Zen	Vac	L-N	Own	C	4	Own	Sp	18.6	R	R	133½	3402	30x5	30x5
White 160	——	1700	Own GRCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4025	30x5	30x5
White 161	——	1850	Own GRCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4290	34x7	34x7
White 60	——	1850	Own 2 A	6	3½x4½	29.4	54@2100	Pw	Zen	Vac	DR	Own	U	3	Own	Sp	17.8	4	Tr	138	3739	30x5	30x5D
White 162	——	1900	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4260	30x5	30x5D
White 210	——	2300	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	4875	30x5	30x6D
White 211	——	2425	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	5110	32x6	32x6D
White 212	——	2700	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	5230	34x7	34x7D
White 57	——	2725	Own GRC	4	4 x5¾	25.6	45@1600	Pw	Zen	Vac	L-N	Own	U	4	Own	Sp	19.3	R	R	146	3935	32x6	32x6
White 20 A	——	2125	Own GKA	4	3¾x5½	22.5	31@1600	CS	Zen	Vac	L-N	Own	C	4	Own	2R	32.1	R	R	145½	4572	34x5	34x5D
White 61	——	2450	Own 4 A	6	3⅜x4½	33.7	61@2100	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	D	148	4789	30x5	30x5D
White 56	——	3125	Own GRC	4	4 x5¾	25.6	45@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	26.2	R	D	165	5276	36x4S	36x7S
White 51 A	——	3750	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	35.6	R	D	170	6438	36x5S	36x8S
White 51 AT	——	3875	Own 6 RB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	46.6	R	D	134	6227	36x5S	36x8S
White 58	——	4400	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	49.7	D	R	180	1797	36x5S	36x8SD
White 65 K	——	4600	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	33.9	4V	D	180	7408	8.25x20B	8.25x20DB
White 55	——	4650	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	66.1	D	R	174	8737	36x5S	40x8SD
White 52 T	——	4700	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	76.5	D	R	129	8461	36x5S	40x8SD
White 52	——	5100	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	2R	58.4	D	R	174	9409	36x6S	40x12S
White 59 A	——	6000	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	66.5	D	R	155	9775	40x8	40x14S
White 63	——	5900	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	41.4	4V	D	168	8350	34x7	34x7D
White 64	——	6300	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Own	2R	46.9	R	D	180	9150	36x8	36x8D
White 63 SW 200	——	6010	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Tim	Wo	44.2	4V	—	193	10000	8.25x20B	8.25x20DB
White 64 SW 200	——	7082	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Tim	Wo	45.8	4	—	198	11200	8.25x20B	8.25x20DB
White 64 SW 300	——	7430	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Tim	Wo	56.7	4	—	198	12400	9.00x20B	9.00x20DB
White 59 ASW 400	——	8950	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Tim	Wo	67.1	4	—	204	13200	40x8S	40x8D
Willys Six C-113	½	395	Own C-113	6	3¼x3⅞	25.3	65@3400	Pw	Til	P	Aut	Own	U	3	Own	Sp	13.20	4	B	113	1872	5.00x19	5.00x19
Willys Six C-131	1½	595	Own C-131	6	3¼x3⅞	25.3	65@3400	Pw	Til	P	Aut	W-G	U	4	Cla	Sp	40.8	4	B	131	2625	5.50x20	6.00x32
Willys-Knight T-103	1½	825	Own KGT	6	2⅞x4¾	20.7	55@3000	Pw	Til	Vac	Aut	Cov	U	4	Cla	Sp	42.33	4	B	131	2848	5.50x20	30x5

GENERAL NOTATIONS

***†REFFRENCE MARKS** apply to individual lines only and explanations are given under the subdivision for each company in the "SPECIAL NOTATIONS."

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight in pounds

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Kgt, Knight; Lyc, Lycoming; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry.

LUBRICATION—Pb, pressure lubrication to main and connecting rod bearings; Pw, full pressure lubrication to all main, connecting rod and camshaft bearings, including wrist pins; CS, circulating splash; Sp, splash.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, Gravity; Vac, Vacuum tank; P, Fuel pump.

IGNITION—AB, American-Bosch; Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; N-E, North East; RB, Robert Bosch; DR, Delco-Remy; Mag, Magneto

TRANSMISSION—Br, L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cotta Cotta Gear Company; Cla, Clark Equipment Company.

LOCATION—C, center, amid; U, in unit with engine; J, on jackshaft.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, Internal gear; St, Straight bevel; Sp, Spiral bevel; Wo, Worm; 2R, Double reduction; Ch, Chain; R, Relay drive.

BRAKES—J, Jackshaft; R, Rear wheels; D, Drive shaft; 4, four-wheel; Tr, Transmission; V, Vacuum booster; W, Westinghouse air brake; B, Both front and rear wheels.

TIRES—B, Balloon; D, Dual; S, Solid; P, Pneumatic

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear, weight 6,400. Price $3,900

Chieftain model also available as Dump Truck, 160-inch wheel base.

Balloon tires optional on Chief, Chieftain and Big Chief models.

AUTOCAR

*Engines in these models are located under the driver's seat.

BROCKWAY

*Six wheelers.

CHEVROLET

Utility model available on 131-inch wheel base with chassis weight of 2,760 pounds and equipped with dual rear wheels.

DAY ELDER

Additional standard wheel bases are available on different models as follows:—

60	156	200	165, 180, 204
85	156, 168	240	214
110	168, 186	285	216
130	165, 180, 204	345	216
160	165, 180, 204	402	216

DIAMOND T.

*Six wheelers.

DURANT

*Price includes panel body.

F. W. D.

The BTL and BT models are special line construction trucks in which complete provision for mounting AT and T earth boring machine, winch, body and other line construction accessories is included in the standard chassis.

*Indicates six-wheel model.

Special power take-off transmission, which provides 3 power take-offs which may be operated in any transmission speed, optional on all models.

*Foot brake on X6 is a Bendix type, operating on all six wheels.

FEDERAL

*Six wheelers.

GRAMM

Series	Straight Rating	Add. Wheel Base	Pay Load Range
6	10,000	157-174	1¾ tons
B	11,000	145-196	2 tons
C	13,000	145-196	2½ tons
D	15,000	145-196	3 tons
E	15,000	145-196	3 tons

GENERAL MOTORS TRUCK

*Capacity indicated for each chassis is the recommended gross weight without exceeding rated capacity of tires. The tire size does not affect the straight rating for which chassis is guaranteed and each model is designed to operate satisfactorily under average conditions with loads giving a total gross weight (chassis, body, equipment and payload) equal to straight rating given below. The additional standard wheel base lengths, the number of additional tire types (tire combinations—each type carrying a recommended gross weight) and the ton range on a nominal payload basis for each model is given below.

Note: Models T-15 to T-80, inclusive, as well as Models TX and WX, are available as coach chassis for export only.

Model	Straight Rating	Additional Wh. bases. ins.			Addit'l Tire Types	Pay'l Range
T-11	3800	None			None	½
T-15	6500	141			9	¾-1¼
T-17	6500	141			6	¾-1¼
T-19	8500	141		151	20	1-2
T-25	9000	141		152	15	1-2
T-30	12500	152		164	13	1½-3
T-42	15000	152	164	181	10	2-4
T-44	16000	152	164	181	10	2-4½
T-60	22000	166¾	184½	200¼	16	2½-6
T-82	24000	167½	185¼	261	10	3-7
T-90	28000	201		220	5	5-7½

Optional rear axle ratios are available for all models. Double reduction axles available for Models T-60 and T-82.

INDIANA

*Six wheelers.

MACK

Other wheel bases furnished on all truck models.

On 6-wheel jobs, 4 rear wheels driven by chains, foot brake on 4 rear wheels.

HYP—Hypoid drive, single reduction.

††Made also in tractor models.

REO

Model F A also available in 129-inch wheel base.

SELDEN

Additional standard wheel bases are available on different models as follows:—

Model 37C	162 and 181
39C	177 and 190½
47CB, 47CD	151, 164 and 184
67C	151, 164, 184 and 198

STEWART

Models 30 and 30X can also be supplied in 110, 120 and 140-inch wheel base.

Models 40 and 40X can also be supplied in 110, 140 and 160-inch wheel base.

*Model 34X can be supplied in 135, 145, 160 and 176-inch wheel base.

Model 28X can be supplied in 130, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160 and 176-inch wheel base.

*Model 26XW can be supplied in 148, 176 and 190-inch wheel base.

*Models 18X, 32X and 33X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment models 18X, 19X, 33X, 31X and 27X can be supplied with Timken dual reduction rear axle.

STUDEBAKER

*Capacity model GN-N is 4,000 poupds for body, cab, driver and payload.

Maximum gross load, chassis, body and payload for Models 77 and 88 is 12,500 lbs. and for Model 99 is 14,000 lbs.

‡Hand brake same as foot brake, standard. Hand brake on drive shaft, special equipment.

Equipment - - - Development

Problems of Transmission Design

The following, in part, is the concluding installment of a discussion of transmission design which was prepared by R. Dean-Arverns, A. M. I. A. E, and which appeared in a recent edition of the British publication, the Automobile Engineer. It has appeared serially in the Automotive Daily News.

The foregoing calculations concern the spur-gear type box, and although the loads from other types of gear introduce additional loads, such as thrust from the single helical gear, a box designed on this foundation should give satisfaction from a load-carrying viewpoint. The mounting of the mainshaft end in the primary shaft, the number and limits of the sliding splines adopted, heavy lubrication, wheel web design, and the mounting of the layshaft gears are further points in design which, if not carefully considered, might possibly be the sources of unsatisfactory results in operation. The plain bronze bearing for the mainshaft front end has almost entirely disappeared from modern designs, especially on gear boxes for heavy duty, although there are isolated examples of the earlier type bearing in very light boxes. The bush bearing possessed its advantages, however, since it provided a greater length of shaft support. Against this must be set the inadequate diameter, which aggravated oil film failure. The bush type is undoubtedly the quieter bearing in its initial stages, but it becomes a real source of danger when the slightest wear occurs, hence the introduction of bearings of ball or roller type.

The short length of mainshaft support permitted by the ball type bearing renders it essential to arrange the overhang from the pinion inner bearing as small as possible. Difficulty arises in compromising between an uneconomical pinion bearing, or an inadequate mainshaft dimension, which will permit a deflection to the mainshaft for which no allowance in calculation has been made, the consequences of which have previously been mentioned. Lubrication difficulties are negligible in this case as sufficient lubricant is supplied by the churning of the gear wheels. The older type bush could be considered more as a bearing, but the ball functions almost entirely as a support which renders the mainshaft and primary shaft subject to the conditions of a beam broken in the middle. The heavier the gear box duties the more pronounced does this difficulty become, when the inclusion of a center bearing becomes almost a necessity, further tending towards an increase in overall dimensions.

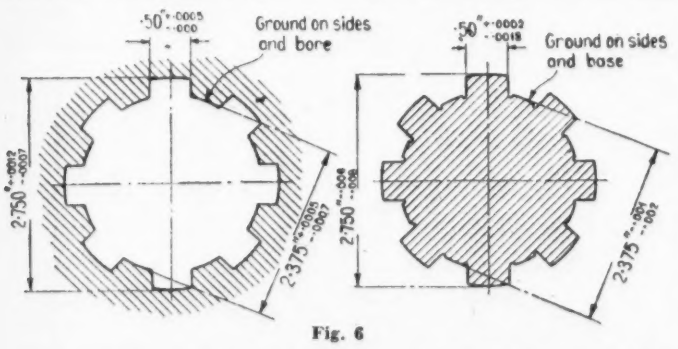


Fig. 6

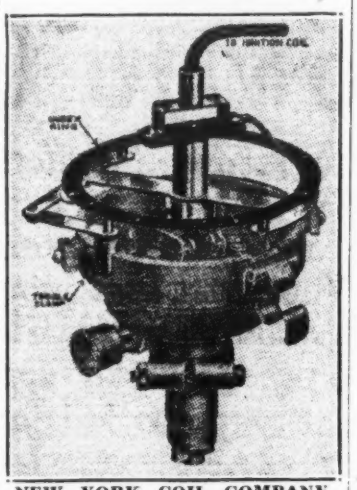
Many differing methods of layshaft gear mountings are available, those which include a revolving shaft and others which possess a rigid shaft but allow rotation of the gears. In this design the gear wheels are often formed in a cluster, although whether this procedure is advisable or otherwise is open to debate. From a manufacturing viewpoint there is the possibility of costly production occasioned perhaps by difficulties encountered in cutting and grinding the teeth, whilst distortion in the hardening processes is very liable to occur. The main objection, however, to cluster gears is one of design. Tooth inaccuracies that produce noise on one gear will inevitably be transmitted through the layshaft train and become operative on other gears. The effect of conflicting forces of this nature cannot be fully estimated, and it is highly probable that any ring or whine may be more easily transmitted to the complete system. For these reasons, apart from maintenance requirements, separate gear wheels bolted if necessary to flanges on a cluster center are desirable. This type of layshaft has the further advantage that bearings will not be disturbed when a new wheel is fitted, although the ideal shaft is one upon which all wheels and centers are separate and pulled up tight as a unit. A break in the continuity of contact of the gear center is advisable because it has been found in a number of cases that it splits up the medium through which sound may be transmitted.

Bound up with this question is that of web design, which should be as light as compatible with adequate strength, while adjustment in volume of the web may be made experimentally as a further means of eliminating noise. Additional thickness may be required, while on the other hand, drilled holes may be necessary to assist in overcoming such phenomena.

From measurement and available data, main-shaft splines do not appear to follow any definite rule with regard to limits. There is, in fact, great diversity of opinion regarding the type and number of splines. One feature, however, which is common practice concerns the location of the gear wheel, which is invariably on the shaft spline base, and the bore of the wheel. The old type radial spline served its purpose admirably and had many features to recommend it. The present-day parallel spline is more easily manufactured, but its depth is small in comparison, with the consequent increase in intensity of stress and resulting shorter life. For this reason the number of splines has been increased, and it is a rare occurrence to find less than six. It is, however, doubtful whether each spline face takes its share of load, and the selection of a deeper spline than the widely adopted American standard is desirable. A deeper spline requires, however, a correspoding increase in shaft diameter. In certain cases a compromise is arranged between the deep radial spline and the shallow straight spline, the manufacturing advantages of the one being combined with the strength of the other. In the smaller diameter shafts of the private car the spline limits generally conform to those of Newall standard, but this procedure requires rectifying when the shaft reaches diameters in excess of 1¾ inches. Limits that have given satisfactory results in this type of shaft are those given in Fig. 6. The flank limits are of great importance with regard to spline loading, slackness in this direction being the cause of load application at the weakest section of the spline.

However much care is exercised in the design of the gear shafts and bearings, a quiet combination will not result if the design of the gear case promotes resonance. Stiffness must be the primary consideration, and the gear case ends sufficiently thick to resist flexure. It is not uncommon for the two ends to bulge when the gears are under load. The gear casing that follows round the gears as closely as practical will, if sufficiently rigid and of suitable material, give satisfactory results. A fairly common error consists in making the face that carries the cover insufficiently stiff or of such dimensions as to affect the general rigidity of the structure as a whole. The gear case may be made much thinner in section if small half-round ribs are arranged at close intervals to prevent drumming through lack of rigidity.

DEVELOPS NEW POINT SYNCHRONIZER



NEW YORK COIL COMPANY
breaker point synchronizer

The New York Coil Company, Mont Clare, Pa., recently introduced a device for synchronizing ignition breaker points. A feature of this new instrument is that it employs the ignition spark itself as an indication of the proper synchronization of the breaker points. The device does not incorporate in its design the use of test lights or an indicator marked in degrees. The spark plugs are not removed when conducting a test. The price is $15, complete, with metal case.

HAVERS MANAGES CAMPBELL SALES ORGANIZATION

Victor E. Havers has joined the J. C. Campbell Company, Newark, N. J., manufacturer of Campbell's Lu-Bri-Cant, as sales manager.

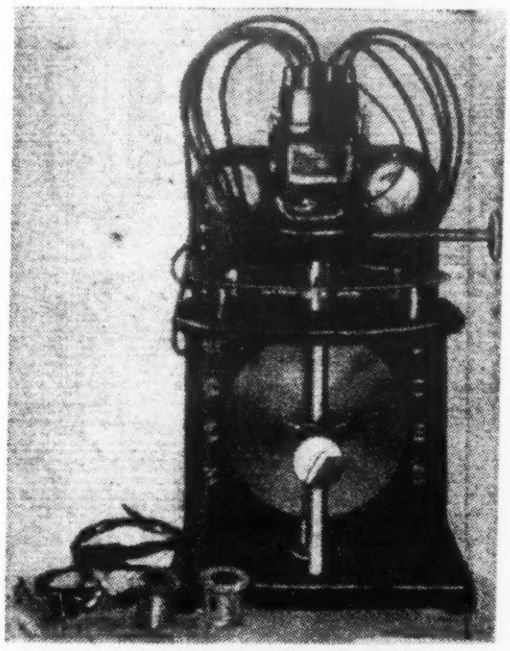
Havers was formerly assistant Eastern manager of Gardner Motor Company for four years. He also was connected with the New York distributor for Hupmobile for four years as wholesale manager.

Early in his career Havers was identified with automobile racing, and will be remembered by followers of the sport under the name of Bower.

He has been engaged in the automobile business for the past twenty years as a salesman, sales manager, manufacturer and a sales promotion executive.

He is a graduate of Yale and Peddie Institute, and resides in Ridgewood, N. J.

Introduces New Ignition Tester



MALLORY IGNITION TESTER

Mallory Electric Corporation, Toledo, O., has announced a new ignition tester which is suitable for testing condensers, distributors, synchronizing contact points and ignition governors.

Incorporated in the machine are a stationary spark gap, a large rotary spark gap, eight special spark plugs, an ammeter, milliameter, adapters and the necessary wires and leads. It has a positive speed control motor. Speed range of the positive speed control is from 100 to 3,000 r. p. m. Provision has been made to accommodate distributors of all types, it is claimed. The main shaft is hollow to take care of distributors with long shafts.

Graham-Paige Announces New 1,000-Pound Delivery Model

The Graham-Paige Motors Corporation announces a new model delivery car of 1,000 pounds capacity, listing at $895, with either a panel or screen body. In general construction and appearance the new model follows closely the previous Paige commercial car. The bodies are identical with those on the former model, except that the length of the loading space has been increased.

The new delivery car chassis is of 115-inch wheelbase, mounted on 18-inch wheels, with 5½-inch six-ply tires. The bore and stroke of the six-cylinder engine are 3⅛-inch and 4½-inch, respectively. The displacement is 207 cubic inches. It develops 66 b. h. p. The drive is through a single plate clutch and a three-speed transmission; the final drive is by spiral bevel gear and a semi-floating rear axle, the gear ratio being 4.7 to 1. Service brakes are internal hydraulic on all wheels, with 12-inch drums; the hand brake operates on the transmission shaft.

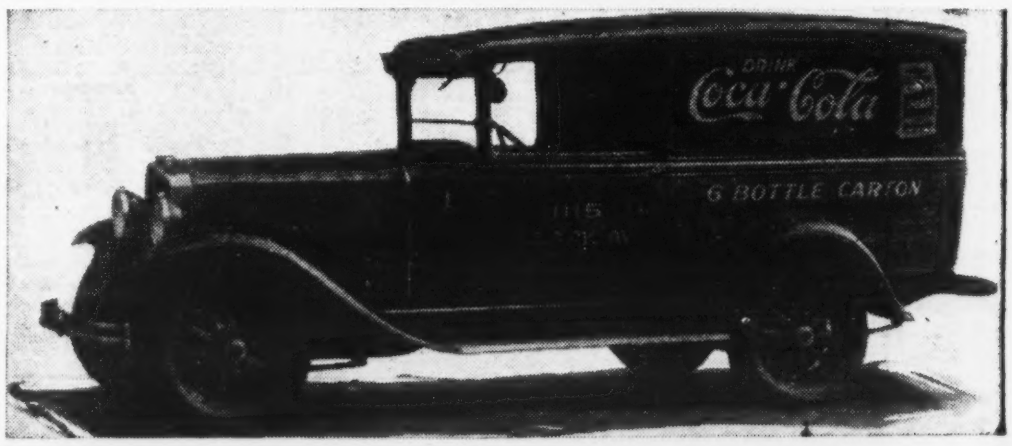
The side channels of the chassis frame run the full length of the body, eliminating unsupported overhang at the rear. Heavy rear bumpers are mounted on the ends of the frame at standard height.

Shatter-proof plate glass is standard equipment throughout. Both bodies are equipped with an electric illuminated visor sign. The spare tire is carried in a fender well on the right side, on a bracket that is mounted directly on the chassis frame. Full length steel running boards serve as side bumpers. A single key operates the steering and ignition lock, door lock and spare tire lock.

Precautions against the entrance of fumes, dust and water feature the entire body construction. The exhaust discharges to the side instead of at the rear.

The floor boards are laid with an expanding steel seal between them, and the rear doors are weather stripped and equipped with steel flanges that fit closely into recesses in the body structure. These doors are so mounted as to give an unobstructed opening the full width of the body. The front doors are 33½ inches wide.

The radiators, front bumper, headlamps, spare tire clamp and door handles are finished in chronium plate.



GRAHAM-PAIGE new model 1,000-pound delivery panel body

There's a Lot of BUSINESS

Here's How to Go After It

If you want to get more dealers and sell more cars, trucks, accessories or whatever you manufacture, it should be quite obvious that you must increase your selling effort. You must hire more salesmen, do more advertising or in some way get your sales message to the attention of more prospective buyers.

Business is not going to fall into your lap, and the same effort you made last year isn't going to work this year.

If you want to increase your volume of business increase the volume of your advertising in Automotive Daily News.

During the Chicago Show Automotive Daily News will be the only publication that will permit advertisers to hammer away every day, not only to the trade who will attend the show, but to thousands who will not attend.

No more economical or effective sales effort is available to the automotive advertiser.

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